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AIRLINE TRANSPORT PILOT

FAA-T-8080-6B
AVN-130 09/88

AIRPLANE—FAR PART 135

HELICOPTER—VFR

HELICOPTER—IFR

GYROPLANE—VFR

QUESTION BOOK

1986

U.S. Department of Transportation
Federal Aviation Administration

Expires September 1, 1988

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AIRLINE TRANSPORT PILOT

AIRPLANE—FAR PART 135

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QUESTION BOOK

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FEDERAL AVIATION ADMINISTRATION
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MAXIMUM TIME ALLOWED FOR TEST: 6 HOURS

Materials to be used with this question book when used for airman testing:

1. Airman Written Test Application which includes the answer sheet.
2. Question Selection Sheet which identifies the questions to be answered.
3. Plastic overlay sheet which can be placed over performance charts for plotting purposes.

GENERAL INSTRUCTIONS

1. Read the instructions on page 1 of the Airman Written Test Application and complete the form on page 4.
2. The question numbers in this question book are numbered consecutively beginning with No. 6001. Refer to the question selection sheet to determine which questions to answer.
3. For each item on the answer sheet, find the appropriate question in the book.
4. Mark your answer in the space provided for that item on the answer sheet.
5. Remember:

   Read each question carefully and avoid hasty assumptions. Do not answer until you understand the question. Do not spend too much time on any one question. Answer all of the questions that you readily know and then reconsider those you find difficult. Be careful to make necessary conversions when working with temperatures, speeds, and distances.

If a regulation or operations procedure is changed after this question book is printed, you will receive credit until the affected questions are revised.

THE MINIMUM PASSING GRADE IS 70.

Legend material and excerpts from FAR Part 25 and CFR Title 49, Parts 172 and 175 appear in Appendix 2, pages 1 through 34.

WARNING

§ 61.37 Written tests: cheating or other unauthorized conduct.

(a) Except as authorized by the Administrator, no person may—

(1) Copy, or intentionally remove, a written test under this Part;

(2) Give to another, or receive from another, any part of copy of that test;

(3) Give help on that test to, or receive help on that test from, any person during the period that test is being given;

(4) Take any part of that test in behalf of another person;

(5) Use any material or aid during the period that test is being given; or

(6) Intentionally cause, assist, or participate in any act prohibited by this paragraph.

(b) No person whom the Administrator finds to have committed an act prohibited by paragraph (a) of this section is eligible for any airman or ground instructor certificate or rating, or to take any test therefor, under this chapter for a period of one year after the date of that act. In addition, the commission of that act is a basis for suspending or revoking any airman or ground instructor certificate or rating held by that person.

PREFACE

This question book has been developed by the FAA (Federal Aviation Administration) for testing applicants in the following knowledge areas:

Airline Transport Pilot—Airplane (FAR Part 135)
Airline Transport Pilot—Helicopter (VFR)
Airline Transport Pilot—Helicopter (IFR)
Airline Transport Pilot—Gyroplane (VFR)

It may also be used as a study guide. It is issued as FAA-T-8080-6B, Airline Transport Pilot—Airplane (FAR Part 135), Helicopter (VFR), Helicopter (IFR), and Gyroplane (VFR) Question Book and is available to the public from:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

or from U.S. Government Printing Office Bookstores located in major cities throughout the U.S.

The questions included in this publication are predicated on regulations, principles, and practices that were valid at the time of publication. The question selection sheets prepared for use with this question book are security items and are revised at frequent intervals.

The Federal Aviation Administration does not supply the correct answers to questions included in this book. Students should determine the answers by research and study, by working with instructors, or by attending ground schools. The Federal Aviation Administration is NOT responsible for either the content of commercial reprints of this book or the accuracy of the answers they may list.

Comments regarding this publication should be directed to:

U.S. Department of Transportation
Federal Aviation Administration
Aviation Standards National Field Office
Examinations Standards Branch
Operations Standards Section, AVN-131
P.O. Box 25082
Oklahoma City, Oklahoma 73125

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AIRLINE TRANSPORT PILOT
(AIRPLANE—FAR Part 135, HELICOPTER—VFR, HELICOPTER—IFR, GYROPLANE—VFR)

INTRODUCTION

This question book follows a new concept in knowledge testing that was established in 1982 with the publication of the Airline Transport Pilot—Airplane (FAR Part 135) Question Book. That question book was the first of a series being developed for use as both a question book and a study guide. The planned revision cycle is 24 months for the question books and 12 months for the question selection sheets. All the new question books and question selection sheets are stamped to indicate their expiration dates.

At an FAA testing center or an FAA designated written test examiner's facility, the applicant is issued a "clean copy" of this question book, an appropriate question selection sheet which indicates the specific questions to be answered, and AC Form 8080–3, Airman Written Test Application, which contains the answer sheet. The question book contains all the supplementary material required to answer the questions. This material will be found near the question or in Appendix 2 or 3. Page, figure, table, or appendix numbers are given wherever required.

THE WRITTEN TEST

Questions and Scoring

The test questions are of the multiple–choice type. Answers to questions listed on the question selection sheet should be marked on the answer sheet of AC Form 8080–3, Airman Written Test Application. Directions should be read carefully before beginning the test. Incomplete or erroneous personal information entered on this form delays the scoring process.

The answer sheet is sent to the Mike Monroney Aeronautical Center in Oklahoma City where it is scored by computer. The applicant will then be issued an AC Form 8080-2, Airman Written Test Report. This report must be presented for a flight test or for re–testing in the event of written test failure. The applicant's AC Form 8080-2 will list the number of each question missed. The references for those questions are listed in Appendix 5.

The test may be taken at FAA Testing Centers, FAA written test examiners' facilities, or other designated places. After completing the test, the applicant must surrender the issued question book, question selection sheet, answer sheet, and any papers used for computations or notations, to the monitor before leaving the test room.

When taking the test, the applicant should keep the following points in mind:

1. Answer each question in accordance with the latest regulations and procedures.
2. Read each question carefully before looking at the possible answers. You should clearly understand the problem before attempting to solve it.
3. After formulating an answer, determine which of the alternatives most nearly corresponds with that answer. The answer chosen should completely resolve the problem.
4. From the answers given, it may appear that there is more than one possible answer; however, there is only one answer that is correct and complete. The other answers are either incomplete or are derived from popular misconceptions.
5. If a certain question is difficult for you, it is best to proceed to other questions. After the less difficult questions have been answered, return to those which gave you difficulty. Be sure to indicate on the question selection sheet the questions to which you wish to return.
6. When solving a computer problem, select the answer nearest your solution. The problem has been checked with various types of computers; therefore, if you have solved it correctly, your answer will be closer to the correct answer than to any of the other choices.
7. To aid in scoring, enter personal data in the appropriate spaces on the test answer sheet in a complete and legible manner. Enter the test number printed on the question selection sheet.

Retesting—FAR Section 61.49

Applicants who receive a failing grade may apply for retesting by presenting their AC Form 8080–2, Airman Written Test Report—

(1) after 30 days from the date the applicant failed the test; or

(2) in case of the first failure, the applicant may apply for retesting before the 30 days have expired upon presenting a written statement from an authorized instructor certifying that the instructor has given ground instruction to the applicant and finds the applicant competent to pass the test.

NOTE: Blank spaces appear on several pages of this publication. This permits referenced figures and tables to appear as close as possible to their related questions.

APPENDIX 1

6001. What are the minimum certificate and rating requirements for the pilot in command of a multiengine airplane in commuter air carrier service under IFR?

1—Commercial pilot with multiengine and instrument rating.
2—Airline transport pilot of any category; multiengine class rating.
3—Airline transport pilot; airplane category; multiengine class rating; airplane type rating, if required.
4—Commercial pilot; airplane category; multiengine class and instrument rating.

6002. An airplane with two reciprocating engines having a passenger seating configuration of eight seats, excluding any pilot seat, is being operated under VFR in a non-commuter flight operation. What are the minimum certificate and rating requirements for the pilot in command?

1—Commercial pilot; airplane category; multiengine class; instrument rating; airplane type rating, if required.
2—Airline transport pilot; airplane category; multiengine class.
3—Commercial pilot; airplane category; multiengine class.
4—Airline transport pilot; airplane category; multiengine class; airplane type rating.

6003. No certificate holder may use a person as pilot in command unless that person has passed a line check

1—within the past 90 days.
2—within the past 180 days.
3—since the beginning of the 6th month before serving as pilot in command.
4—since the beginning of the 12th month before serving as pilot in command.

6004. A multiengine airplane is being operated by a commuter air carrier. What are the minimum certificate and rating requirements for the pilot in command?

1—Airline transport pilot; airplane category; multiengine class; airplane type rating, if required.
2—Commercial pilot; airplane category; multiengine class; instrument; airplane type rating, if required.
3—Commercial pilot; airplane category; instrument rating.
4—Airline transport pilot; airplane category; multiengine class.

6005. What are the minimum certificate and rating requirements for the pilot in command of a turbojet airplane with two engines?

1—Airline transport pilot of any category; multiengine class rating; airplane type rating.
2—Airline transport pilot; airplane category; multiengine class rating; airplane type rating, if required.
3—Commercial pilot; airplane category; multiengine class rating; instrument rating; airplane type rating.
4—Commercial pilot of any category; instrument rating.

6006. A pilot in command completes a flight at 1 p.m., March 1, and determines that the flight time limitation for a consecutive 24-hour period has inadvertently been exceeded. The pilot in command may not be assigned for another flight before

1—11 p.m., March 1.
2—1 a.m., March 2.
3—5 a.m., March 2.
4—1 p.m., March 2.

6007. What are the minimum requirements for the line check required of each pilot in command authorized for IFR air taxi operations? The line check shall be given over

1—one route segment in each type of airplane the pilot is to fly and includes takeoffs and landings at each airport on the route.
2—a civil airway or an approved off-airway route in one type of airplane the pilot is to fly and includes takeoffs and landings at one or more representative airports.
3—one route segment in one type of airplane the pilot is to fly and includes a takeoff and landing at one representative airport.
4—a civil airway or an approved off-airway route in each make and model airplane the pilot is to fly and includes instrument approaches at each designated airport on the route.

6008. What are the minimum requirements for the line check required of each pilot in command authorized for VFR air taxi operations? The check shall be given over

1—one route segment in each type airplane the pilot is to fly and includes takeoffs and landings at each airport on the route.
2—a civil airway or an approved off-airway route in one type of airplane the pilot is to fly and includes takeoffs and landings at one or more representative airports.
3—one route segment in one type airplane the pilot is to fly and includes takeoffs and landings at one or more representative airports.
4—a civil airway or an approved off-airway route in each type of airplane the pilot is to fly and includes takeoffs and landings at one or more representative airports.

6009. What are the minimum certificate and rating requirements for the second in command of a multiengine airplane operating VFR?

1—Airline transport pilot; airplane category; multiengine class rating; airplane type rating if required.
2—Commercial pilot; airplane category; multiengine class rating; instrument rating.
3—Commercial pilot; airplane category; multiengine class rating.
4—Airline transport pilot; airplane category; multiengine class rating.

6010. If you are to serve as pilot in command in a VFR operation, you must have passed a line check

1—since the beginning of the 6th calendar month before the date you begin that operation.
2—during the past 6 calendar months.
3—during the past 18 calendar months.
4—since the beginning of the 12th calendar month before the date you begin that operation.

6011. A multiengine airplane having twelve passenger seats is being operated under VFR. What are the minimum certificate and rating requirements for the second in command?

1—Commercial pilot; airplane category; multiengine class rating; instrument rating; appropriate type rating.
2—Airline transport pilot; airplane category; multiengine class.
3—Commercial pilot; airplane category; multiengine class; instrument rating.
4—Airline transport pilot; airplane category; multiengine class; appropriate type rating.

6012. You are being designated pilot in command of a multiengine, reciprocating-engine-powered airplane operated in passenger-carrying service by a commuter air carrier. If five takeoffs and landings are accomplished in that make and basic model, which additional pilot-in-command experience meets the requirement for designation?

1—Two takeoffs and landings, and 8 hours.
2—Seven takeoffs and landings, and 3 hours.
3—Five takeoffs and landings, and 5 hours.
4—Three takeoffs and landings, and 6 hours.

6013. You are being designated as pilot in command of a turbojet-powered airplane operated in passenger-carrying service by a commuter air carrier. If ten takeoffs and landings are accomplished in that make and basic model, which additional pilot-in-command experience meets the requirement for designation?

1—5 hours, and five takeoffs and landings.
2—10 hours.
3—10 hours, and five takeoffs and landings.
4—15 hours.

6014. Your experience includes 8 hours in a particular make and basic model multiengine turboprop airplane. Which additional pilot-in-command experience meets the requirements for designation as pilot in command of that airplane when operated by a commuter air carrier in passenger-carrying service?

1—Five takeoffs and landings, and 2 hours.
2—Ten takeoffs and landings, and 2 hours.
3—Twelve takeoffs and landings.
4—Seven takeoffs and landings.

6015. You are being designated pilot in command of a single-engine airplane operated in passenger-carrying service by a commuter air carrier. If seven takeoffs and landings are accomplished in that make and basic model, which additional pilot-in-command experience meets the requirement for designation?

1—3 hours.
2—5 hours.
3—8 hours.
4—10 hours.

6016. You are being designated pilot in command of a multiengine, turboprop-powered airplane operated in passenger-carrying service by a commuter air carrier. If eight takeoffs and landings are accomplished in that make and basic model, which additional pilot-in-command experience meets the requirement for designation?

1—7 hours.
2—5 hours, and two takeoffs and landings.
3—Two takeoffs and landings, and 10 hours.
4—Seven takeoffs and landings, and 5 hours.

6017. To serve as pilot in command in an IFR operation, you must have passed a line check

1—since the beginning of the 12th month before that service, which included at least one flight over a civil airway, or approved off-airway route, or any portion of either.
2—consisting of a flight over the route to be flown, with at least three instrument approaches at representative airports, within the past 12 calendar months.
3—within the past 12 months, which included a portion of a civil airway and one instrument approach at one representative airport.
4—since the beginning of the 6th month before that service, an IFR flight over the route to be flown, with an instrument approach and landing at each regular stop along the route.

6018. A pilot in command who is authorized to use an autopilot system in place of a second in command, may take the autopilot check

1—concurrently with the instrument proficiency check, but at 12-month intervals.
2—in any aircraft appropriately equipped, providing the check is taken at 3-month intervals.
3—concurrently with the competency check, providing the check is taken at 6-month intervals.
4—concurrently with the line check, but at 180-day intervals.

6019. Above what altitude, in an unpressurized airplane, must all passengers be supplied oxygen?

1—10,000 feet MSL.
2—12,000 feet MSL.
3—14,000 feet MSL.
4—15,000 feet MSL.

6020. You may not serve as a pilot in any operation unless you have passed

1—a competency check within 180 days prior to the date you are to serve.
2—an aircraft proficiency check since the beginning of the 6th calendar month prior to the date you are to serve.
3—a competency check since the beginning of the 12th calendar month prior to the date you are to serve.
4—an aircraft simulator check within the previous 6 calendar months.

6021. You may not serve as pilot in command in an IFR operation unless you have passed an

1—instrument competency check under actual IFR conditions since the beginning of the 12th calendar month prior to the date you are to serve.
2—aircraft competency and an instrument proficiency check within the previous 18 calendar months.
3—instrument proficiency check in the airplane in which you are to serve, or in an approved aircraft simulator, within the previous 12 calendar months.
4—instrument proficiency check under actual or simulated IFR conditions, since the beginning of the 6th calendar month prior to the date you are to serve.

6022. A second in command completes a flight at 6 p.m., Tuesday, and determines that the flight time limitation for a consecutive 24–hour period has inadvertently been exceeded by 30 minutes. The second in command may not be assigned for another flight before

1—4 a.m., Wednesday.
2—6 a.m., Wednesday.
3—10 a.m., Wednesday.
4—6 p.m., Wednesday.

6023. Which airplanes must have a shoulder harness installed at each flight crewmember station?

1—Airplanes having a passenger seating configuration, excluding any pilot seat, of 10 seats or more.
2—All passenger–carrying airplanes operating under FAR Part 135.
3—Large airplanes being operated in commuter air service.
4—Airplanes in commuter air service having a passenger seating configuration, excluding any pilot seat, of eight seats or more.

6024. The planned completion of an assigned flight is 6 a.m. During the 24–hour period preceding that time, the pilot in command on the flight must have been provided a rest period of at least

1—8 consecutive hours.
2—10 consecutive hours.
3—12 consecutive hours.
4—16 consecutive hours.

6025. The required visibility is forecast for the airport of first intended landing. An alternate airport is not required if, for at least 1 hour before and after the ETA, the forecast ceiling is at least

1—1,500 feet above the minimum vectoring altitude.
2—1,000 feet above the altitude prescribed for the initial approach segment of the intended instrument approach.
3—3,000 feet above the airport elevation.
4—1,500 feet above the lowest authorized circling approach MDA.

6026. You are assigned as pilot in command to fly both single–engine and multiengine airplanes and have passed the initial instrument proficiency check in a multiengine airplane. Which requirement applies regarding each succeeding instrument check?

1—Each 6 calendar months, you must take the instrument check in both a single–engine and a multiengine airplane.
2—You may take the instrument check in either a single–engine or a multiengine airplane, if you do so at intervals of 3 calendar months.
3—You must take the instrument check alternately in single–engine and multiengine airplanes.
4—If you take the instrument check in a multiengine airplane, you also qualify in single–engine airplanes.

6027. A second in command, in addition to the pilot in command, is required in all airplanes

1—having a passenger seating configuration of more than nine seats.
2—being operated in commuter air carrier service.
3—powered by turbine engines.
4—having a total seating capacity of nine seats or more and being operated in commuter air carrier service.

6028. You are a pilot in command authorized to use an autopilot system in place of a second in command. During the instrument competency check, you are required to show that you are able (without a second in command) to

1—conduct instrument operations competently both with, and without, the autopilot.
2—conduct properly air–ground communications with, but not without, the autopilot.
3—comply with complex air traffic control instructions with, but not without, the autopilot.
4—copy air traffic control instructions accurately, assuming the autopilot is engaged and functioning properly.

6029. As pilot in command in commuter air service, you have inadvertently exceeded the flight time limitation, without a rest period, by 1 hour. Before being scheduled for another flight, you must be given a rest period of at least

1—16 hours.
2—14 hours.
3—12 hours.
4—10 hours.

6030. Between what altitudes in an unpressurized airplane must oxygen be available to at least 10 percent of the occupants, other than the pilots?

1—Above 10,000 feet through 15,000 feet MSL, if flight at those altitudes is of more than a 30-minute duration.
2—Above 12,000 feet through 16,000 feet MSL, for any time period.
3—Above 12,000 feet through 15,000 feet MSL, if flight at those altitudes is of more than a 15-minute duration.
4—Above 14,000 feet through 16,000 feet MSL, for any time period.

6031. In an operation where the flightcrew consists of two pilots, what is the second-in-command flight time limitation for FAR Part 135 and other commercial flying during any 24 consecutive hours?

1—16 hours.
2—8 hours.
3—10 hours.
4—12 hours.

6032. You are assigned to fly two aircraft, type A and type B, as pilot in command. You may operate both aircraft under IFR if you have passed an instrument proficiency check in

1—type A since the beginning of the 12th month, and in type B since the beginning of the 6th month before you are to serve.
2—either type A or B since the beginning of the 12th month before you are to serve.
3—either type A or B since the beginning of the 24th month before you are to serve.
4—type A since the beginning of the 12th month, and in type B since the beginning of the 24th month before you are to serve.

6033. In an operation where the flightcrew consists of one pilot, what is the pilot-in-command flight time limitation for FAR Part 135 and other commercial flying during any 24 consecutive hours?

1—12 hours.
2—10 hours.
3—8 hours.
4—16 hours.

6034. A pressurized airplane being operated at FL300 can descend safely to 15,000 feet MSL in 4 minutes. What oxygen supply must be carried for all occupants other than the pilots?

1—20 minutes.
2—30 minutes.
3—45 minutes.
4—1 hour.

6035. When a ground proximity warning system is required under FAR Part 135, it must

1—convey warnings for excessive closure rates with the terrain but not for deviation from an ILS glide slope.
2—alert the pilot by an audible warning signal when deviation above or below glide slope occurs.
3—emit a voice warning when the aircraft approaches the terrain within 500 feet or deviates from the glide slope more than 50 feet.
4—convey warnings of any deviation below glide slope and of excessive closure rate with the terrain.

6036. You have 97 hours as pilot in command in a particular type turbojet, approach category B airplane. What MDA and visibility minima must you observe during a S-LOC-31 approach at your destination in this type airplane?

CATEGORY	A	B	C	D
S-ILS 31	949-½ 200 (200-½)			
S-LOC 31	1100-½ 351 (400-½)			1100-¾ 351 (400-¾)
CIRCLING	1160-1 406 (500-1)	1220-1 466 (500-1)	1220-1½ 466 (500-1½)	1320-2 566 (600-2)

1—1,150 feet MSL and 3/4 mile visibility.
2—1,200 feet MSL and 1 mile visibility.
3—1,160 feet MSL and 1 mile visibility.
4—1,200 feet MSL and 1-1/2 miles visibility.

6037. A pilot has inadvertently exceeded the second-in-command flight time limitation by 2 hours. What period of rest must the pilot be given prior to being scheduled for another flight?

1—10 hours.
2—12 hours.
3—14 hours.
4—16 hours.

6038. As a pilot in a two-pilot crew, what is your flight time limitation during any 24 consecutive hours?

1—12 hours in FAR Part 135 and other commercial operations.
2—8 hours total flight time in all commercial and noncommercial operations.
3—10 hours in FAR Part 135 and other commercial operations.
4—12 hours total in any flight operations.

6039. An autopilot may not be used in place of a second in command in any airplanes

1—powered by turbine engines.
2—being operated in commuter air carrier service.
3—having a passenger seating configuration, excluding any pilot's seat, of 10 seats or more.
4—having a total seating capacity of more than eight seats and being operated in commuter air service.

6040. In which aircraft, operating under FAR Part 135, is a third gyroscopic pitch-and-bank indicator required?

1—All transport category airplanes.
2—All turbojet airplanes.
3—All airplanes where the flightcrew of pilot in command and second in command are required.
4—All airplanes having a passenger seating capacity of 30 seats or more.

6041. What restrictions must be observed regarding the carrying of cargo in the passenger compartment?

1—Cargo must be properly secured by a safety belt or other approved tiedown.
2—Cargo must be separated from seated passengers by a partition capable of withstanding specified stresses.
3—All cargo must be carried in a suitable bin and secured to a passenger seat or the floor structure of the airplane.
4—Cargo carried in passenger seats must be forward of all passengers.

6042. A load manifest must be prepared prior to each takeoff for

1—single-engine and multiengine airplanes operating under IFR.
2—any aircraft with a passenger seating capacity of 10 seats or more.
3—multiengine airplanes only.
4—all helicopters and large aircraft operated by a commuter air carrier.

6043. In a cargo-only operation, cargo must be loaded

1—so that it does not obstruct the aisle between the crew and cargo compartments.
2—in such a manner that at least one emergency or regular exit is available to all occupants.
3—so that all required flight crewmembers have ready access to all regular and emergency exits.
4—in such a manner that it does not obscure any exit sign.

6044. Which is a pilot requirement for use of oxygen?

1—Each pilot of an unpressurized aircraft shall use oxygen continuously at 10,000 feet MSL or above.
2—Each pilot of a pressurized aircraft operating at 18,000 feet MSL and above shall have an approved quick-donning type oxygen mask.
3—On pressurized aircraft requiring a flightcrew of two pilots, both shall continuously wear oxygen masks whenever the cabin pressure altitude exceeds 12,000 feet MSL.
4—On unpressurized aircraft, flying above 12,000 feet MSL, pilots shall use oxygen continuously.

6045. In which aircraft, or under what conditions, is airborne thunderstorm detection equipment required?

1—Multiengine turbine-powered airplanes having a passenger seating configuration of 19 seats or more being operated by a commuter air carrier.
2—Any aircraft having a passenger seating configuration of 19 seats or more that is engaged in passenger-carrying operations under IFR or at night.
3—Small multiengine aircraft having a passenger seating configuration of 10 seats or more, excluding any pilot seat, that are engaged in passenger-carrying operations.
4—Turbojet airplanes engaged in cargo or passenger service when operated by a commuter air carrier.

6046. The maximum altitude loss for a malfunctioning autopilot without an approach coupler is 45 feet. If the MDA is 1,620 feet MSL and the touchdown zone elevation is 1,294 feet, to which minimum altitude may you use the autopilot?

1—90 feet AGL.
2—1,510 feet MSL.
3—1,339 feet MSL.
4—1,570 feet MSL.

6047. A flight attendant crewmember is required on airplanes having a passenger seating configuration, excluding any pilot seat, of

1—10 or more.
2—15 or more.
3—20 or more.
4—19 or more.

6048. In addition to fully-equipped liferafts and life preservers, what emergency equipment must be provided during extended overwater operations?

1—One survival kit for each 25 occupants.
2—One water resistant, self-buoyant, portable emergency radio transmitter for each 10 occupants.
3—One survival-type emergency locator transmitter.
4—One pyrotechnic signaling device for each 10 occupants.

6049. Who is responsible for the preparation of a required load manifest?

1—Pilot in command.
2—Dispatcher.
3—Air taxi certificate holder.
4—Company official specifically designated by the Administrator.

6050. Above which altitude must at least one pilot at the controls of a pressurized aircraft wear a secured and sealed oxygen mask?

1—25,000 feet MSL.
2—30,000 feet MSL.
3—35,000 feet MSL.
4—41,000 feet MSL.

6051. In airplanes where a third gyroscopic pitch-and-bank indicator is required, that instrument must

1—be located on the instrument panel immediately below the pilot in command's attitude indicator or flight director.
2—continue reliable operation for at least 45 minutes after the output of the airplane's electrical generating system falls below an optimum level.
3—be operable by a selector switch which may be actuated from either pilot station.
4—continue reliable operation for a minimum of 30 minutes after total failure of the aircraft's electrical generating system.

6052. When a ground proximity warning system is required, it must

1—incorporate a means of alerting the pilot when a malfunction occurs.
2—be so designed that deactivation cannot be accomplished in flight.
3—apply corrective control pressure when deviation below glide slope occurs.
4—incorporate a back-up feature that activates automatically upon total failure of the aircraft's electrical generating system.

6053. Information recorded during normal operation by a required cockpit voice recorder

1—must be retained for at least 12 hours.
2—may be erased only once each flight.
3—may be erased, except the last 30 minutes.
4—must be retained for at least 30 minutes after landing.

6054. Which is a requirement for flightcrew use of oxygen masks in a pressurized cabin airplane?

1—At altitudes above FL250, one of the two pilots at the controls shall use an oxygen mask continuously.
2—Both pilots at the controls shall use oxygen masks above FL300.
3—At altitudes above 25,000 feet MSL, if one pilot leaves the pilot duty station, the remaining pilot at the controls shall use an oxygen mask.
4—At cabin pressure altitudes of 10,000 feet MSL, both pilots at the controls shall wear and use oxygen masks continuously.

6055. The two pilots at the controls of a pressurized aircraft are equipped with approved quick-donning oxygen masks. What is the maximum altitude authorized without one pilot wearing and using an oxygen mask?

1—20,000 feet MSL.
2—25,000 feet MSL.
3—35,000 feet MSL.
4—41,000 feet MSL.

6056. Which is a requirement governing the carriage of cargo?

1—Cargo must be carried in an approved rack, bin, or compartment.
2—Cargo not stowed in an approved bin must be secured by a safety belt or approved tiedown device.
3—If carried directly above seated passengers, cargo must be secured by a tiedown device.
4—All cargo carried in the passenger compartment must be packaged and stowed ahead of the foremost seated passenger.

6057. The maximum altitude loss for a malfunctioning autopilot with an approach coupler is 40 feet. To which minimum altitude may the autopilot be used during an ILS approach in less than basic VFR conditions?

1—40 feet AGL.
2—50 feet AGL.
3—80 feet AGL.
4—100 feet AGL.

6058. Your airplane flight manual specifies a maximum altitude loss of 75 feet for malfunction of the autopilot under cruise conditions. What is the lowest altitude above the terrain you may use the autopilot during en route operations?

1—575 feet.
2—650 feet.
3—1,000 feet.
4—500 feet.

6059. Which person, other than the second in command, may the pilot in command permit to manipulate the flight controls?

1—An official of the National Transportation Safety Board, at any time.
2—When authorized by the certificate holder, a passenger who holds a pilot certificate appropriate for the airplane.
3—An authorized FAA safety representative who is qualified in the airplane, and is checking flight operations.
4—A pilot employed by an engineering firm who is authorized by the certificate holder to conduct flight tests.

6060. At altitudes above 10,000 feet through 12,000 feet MSL, each pilot of an unpressurized airplane must use supplemental oxygen for that part of the flight that is of a duration of more than

1—20 minutes.
2—30 minutes.
3—45 minutes.
4—60 minutes.

6061. Which minimum passenger seating configuration requires a second in command?

1—9 seats.
2—10 seats.
3—12 seats.
4—15 seats.

6062. In which airplanes is a flight attendant crewmember required?

1—Any airplane being operated in commuter air carrier service.
2—Airplanes having a passenger seating configuration, excluding any pilot seat, of 10 or more.
3—All turbine-engine-powered airplanes having a total seating capacity of 19 or more.
4—Any airplane having a passenger seating configuration, excluding any pilot seat, of 20 or more.

6063. In which airplanes is a ground proximity warning system required?

1—All airplanes having a passenger seating configuration, excluding any pilot seat, of 10 seats or more.
2—All turbojet-powered airplanes.
3—Airplanes having a passenger seating configuration of 19 seats or more, being operated in commuter air service.
4—Turbojet-powered airplanes having a passenger seating configuration, excluding any pilot seat, of 10 seats or more.

6064. A commuter air carrier certificate holder plans to assign a pilot as pilot in command of an airplane to be used in passenger-carrying operations. Which experience requirement must that pilot meet if the airplane is to be flown with an autopilot and no second in command?

1—75 hours and 20 landings in type.
2—100 hours as pilot in command in the make and model.
3—100 hours in the category, class, and type.
4—50 hours and 10 landings as pilot in command in the make and model.

6065. Which is not a required item on the load manifest?

1—Aircraft registration or flight number.
2—Maximum allowable takeoff weight.
3—List of passenger names.
4—Identification of crewmembers.

6066. The maximum altitude loss for a particular malfunctioning autopilot under approach conditions is 55 feet. If the touchdown zone elevation is 571 feet and the MDA is 1,100 feet, to which minimum altitude may you use this autopilot?

1—110 feet AGL.
2—626 feet MSL.
3—990 feet MSL.
4—1,050 feet MSL.

6067. Which is a requirement for pilot use of oxygen in a pressurized airplane?

1—At altitudes of 18,000 feet MSL and above, each pilot shall have an approved quick-donning oxygen mask.
2—Each pilot shall use oxygen continuously any time the cabin pressure altitude is more than 12,000 feet MSL.
3—At altitudes above 20,000 feet MSL, the pilot at the controls must use an approved oxygen mask any time the other pilot is away from the duty station.
4—One of the pilots of a two-pilot crew shall wear a quick-donning oxygen mask at cabin pressure altitudes of 10,000 feet MSL and above.

6068. An approved cockpit voice recorder is required equipment in

1—large airplanes having a maximum passenger capacity of more than 19 seats.
2—turbojet-powered airplanes having a passenger seating configuration, excluding any pilot seat, of 10 seats or more.
3—all aircraft operated in commuter air carrier service having a passenger seating configuration of 19 seats or more.
4—multiengine airplanes operating under IFR, having a passenger seating configuration of 10 seats or more.

6069. Which is a condition that must be met by a commuter air carrier certificate holder to have an airplane approved for operation with an autopilot system and no second in command?

1—The operation is restricted to VFR.
2—The passenger seating configuration is 12 or less, excluding any pilot seat.
3—The autopilot system is capable of operating the controls to maintain flight and to maneuver the airplane about the three axes.
4—The operation is restricted to VFR, or VFR over-the-top.

6070. Which is a requirement governing the carriage of carry-on baggage?

1—All carry-on baggage must be restrained so that its movement is prevented during turbulence.
2—Any piece of carry-on baggage, regardless of size, must be properly secured by a safety belt or tiedown device.
3—Carry-on baggage must be stowed ahead of all seated occupants.
4—Pieces of carry-on baggage weighing more than 10 pounds must be carried in an approved rack or bin.

6071. How long must a certificate holder keep copies of completed load manifests?

1—30 days.
2—60 days.
3—90 days.
4—180 days.

6072. The weight and CG of an aircraft used in air taxi service must have been calculated from those values established by actual weighing of the aircraft within what period of time?

1—Multiengine aircraft, 24 calendar months; single-engine, 36 calendar months.
2—Multiengine aircraft, 36 calendar months.
3—Multiengine and single-engine aircraft, 36 calendar months.
4—Within 36 calendar months of issue of original Airworthiness Certificate if fixed equipment has been removed or installed.

6073. The maximum altitude loss specified for malfunction of a certain autopilot under cruise conditions is 50 feet. What is the lowest altitude this autopilot may be used en route?

1—550 feet AGL.
2—1,000 feet AGL.
3—600 feet AGL.
4—500 feet AGL.

6074. Which person may be carried aboard an aircraft without complying with the passenger-carrying requirements of FAR Part 135?

1—An authorized technical representative of an aircraft or engine company.
2—A member of the United States diplomatic corps on an official courier mission.
3—A political candidate campaigning for Federal office.
4—An individual who is necessary for the safe handling of animals on the aircraft.

6075. Before each takeoff, the pilot in command of a passenger-carrying airplane shall ensure that all passengers have been orally briefed on the

1—location of normal and emergency exits, oxygen masks, and life preservers.
2—use of seatbelts, oxygen, and liferafts.
3—use of seatbelts, smoking, and location of survival equipment.
4—use of oxygen, location of emergency medical supplies, and use of flotation equipment.

6076. Which is a requirement regarding the carriage and operation of oxygen equipment for medical use by passengers?

1—Oxygen in liquid form may not be placed aboard the aircraft.
2—No person may smoke within 10 feet of oxygen storage and dispensing equipment.
3—When oxygen equipment is used for the medical treatment of a patient, the rules pertaining to emergency exit access are waived.
4—No person may connect oxygen bottles or any other ancillary equipment until all passengers are aboard the aircraft and seated.

6077. A pilot may not make an instrument approach at a foreign airport if the visibility is less than

1—1 mile.
2—1/2 mile.
3—3/4 mile.
4—2 miles.

6078. At a foreign airport, a pilot may not take off under IFR unless the reported weather conditions indicate that the

1—visibility is 1 mile or more.
2—ceiling is at least 500 feet and the visibility is 1 mile or more.
3—visibility is 1/2 mile or more.
4—ceiling is at least 200 feet and the visibility is 1/2 mile or more.

6079. Under which condition is a pilot not required to keep the shoulder harness fastened during takeoff and landing while at a pilot station?

1—When operating an airplane having a passenger seating configuration, excluding any pilot seat, of 10 seats or less.
2—When serving as either pilot in command or second in command in a small reciprocating-engine-powered airplane.
3—When the pilot cannot perform the required duties with the shoulder harness fastened.
4—When serving as pilot in command or second in command of an airplane having a total seating capacity of eight seats or less.

6080. Which aircraft must be equipped with an approved public address and crewmember interphone system?

1—Any aircraft operated by a commuter air carrier.
2—All turbine-engine-powered airplanes in passenger-carrying operations.
3—Aircraft having a passenger seating configuration, excluding any pilot seat, of more than 19 seats.
4—Multiengine having a passenger seating configuration of 10 seats or more.

6081. During which time period must a required voice recorder of a passenger-carrying airplane be continuously operated?

1—From the beginning of taxi to the end of the landing roll.
2—From engine start at departure airport to engine shutdown at landing airport.
3—From the use of the checklist before the flight to completion of the final check at the end of the flight.
4—From starting to taxi for departure, to engine shutdown after landing at an airport.

6082. Who may be allowed to carry a deadly weapon on board an airplane operated under FAR Part 135?

1—Official bodyguards attached to foreign legations.
2—Security officers employed by corporation executives.
3—Employees of a municipality or state authorized to carry arms.
4—Members of the armed forces of the United States, either on or off duty.

6083. The altitude loss for a particular malfunctioning autopilot with an approach coupler is 60 feet. The reported weather is below basic VFR minima and you are making an ILS approach using the approach coupler. You may use this autopilot to a minimum altitude of

1—50 feet AGL.
2—60 feet AGL.
3—100 feet AGL.
4—120 feet AGL.

6084. A pilot may not take off under IFR at a military airport unless the visibility is

1—at least RVR 16.
2—at least 1 mile.
3—1/2 mile or more.
4—3/4 mile or more.

6085. Which airplanes must have a shoulder harness installed at each flight crewmember station?

1—All airplanes having a passenger seating configuration of eight seats or more.
2—All airplanes operating under FAR Part 135.
3—All turbojet-powered airplanes.
4—All airplanes used in commuter air service.

6086. If a certificate holder deviates from the provisions of regulations which pertain to medical use of oxygen by passengers, a complete report of the incident shall be sent to the FAA within

1—24 hours.
2—48 hours.
3—7 working days.
4—10 working days.

6087. Which performance requirement applies to passenger-carrying land airplanes being operated over water?

1—Single-engine airplanes must not be operated further than 5 miles from the nearest shoreline.
2—Multiengine airplanes must be able to climb, with the critical engine inoperative, at least 100 feet a minute at 1,500 feet above the surface.
3—Single-engine airplanes must be operated at an altitude that will allow them to reach land in case of engine failure.
4—Both single-engine and multiengine airplanes must have integral flotation devices that will keep them afloat in event of ditching.

6088. In unpressurized aircraft, at altitudes above 10,000 feet MSL up to and including 15,000 feet MSL, at least 10 percent of the occupants, other than the pilots, must have an oxygen supply for that part of the flight that has a duration of more than

1—90 minutes.
2—60 minutes.
3—45 minutes.
4—30 minutes.

6089. Who is responsible for submitting a Mechanical Reliability Report?

1—Air Taxi and Commercial Operator certificate holder.
2—Pilot in command.
3—Maintenance facility that discovers a reportable condition.
4—Aircraft maintenance inspector at district office that exercises surveillance.

6090. If carry-on baggage or cargo is carried in the passenger compartment, it must be

1—stowed ahead of the foremost seated passenger.
2—placed in an approved rack, bin, or compartment installed in the aircraft.
3—so located that it does not obstruct the aisle between the crew and passenger compartments.
4—packaged in a fireproof container or secured under a cover made of fire-resistant material.

6091. Which takeoff computation must not exceed the length of the runway plus the length of the stopway for a turbine-engine-powered small transport category airplane?

1—Takeoff distance.
2—Takeoff path.
3—Accelerate-stop distance.
4—Takeoff run.

6092. Turbojet-powered airplanes are required to have a third gyroscopic pitch-and-bank indicator. After total failure of the airplane's electrical generating system, this instrument must continue reliable operation for a minimum of

1—20 minutes.
2—30 minutes.
3—45 minutes.
4—60 minutes.

6093. How many approved first aid kits are required on an aircraft having a passenger seating configuration of 20 seats and a passenger load of 14?

1—None.
2—One.
3—Two.
4—Three.

6094. The planned beginning of an assigned flight is 9 p.m., Thursday and its planned completion is 11 p.m., Thursday. The second in command must have been provided a continuous rest period of

1—12 hours between 9 p.m., Wednesday and 9 p.m., Thursday.
2—8 hours between 9 p.m., Wednesday and 9 p.m., Thursday.
3—12 hours between 11 p.m., Wednesday and 11 p.m., Thursday.
4—10 hours between 11 p.m., Wednesday and 11 p.m., Thursday.

6095. Which document contains procedures that explain how the pilot in command knows that the required return–to–service conditions have been met?

1—Certificate holder's manual.
2—Mechanical Interruption Summary Report.
3—Daily flight log.
4—Operations Inspections and Surveillance Procedures Handbook.

6096. Who is responsible for keeping copies of the Air Taxi and Commercial Operators Manual up to date with approved changes or additions?

1—Supervising FAA district offices.
2—Each employee of the certificate holder who is furnished a manual.
3—Air Taxi/Commercial Technical Service.
4—A representative of the Administrator assigned to the certificate holder.

6097. Your aircraft has a passenger seating configuration of 16 seats, excluding any pilot seat. How many approved first aid kits are required?

1—One.
2—Two.
3—Three.
4—None.

6098. An unpressurized aircraft with 10 occupants other than the pilots, will be cruising at 11,000 feet MSL for 20 minutes. For how many of these occupants must there be an oxygen supply?

1—Eight.
2—Five.
3—One.
4—None.

6099. The oxygen requirements for occupants of a pressurized airplane operated at altitudes above 24,000 feet MSL is dependent upon the airplane's ability to descend safely to an altitude of

1—10,000 feet MSL in 4 minutes.
2—15,000 feet MSL in 4 minutes.
3—8,000 feet MSL at a minimum rate of 3,000 ft./min.
4—12,000 feet MSL at a minimum rate of 2,500 ft./min.

6100. A pilot may not make an instrument approach at a military or foreign airport unless the minimum visibility is at least

1—1/2 mile.
2—RVR 32.
3—RVR 40.
4—1 mile.

6101. A flight attendant crewmember is required in airplanes

1—powered by turbine engines and having a passenger load of 19 or more.
2—having a passenger seating configuration, excluding any pilot seat, of more than 19.
3—operated in commuter air service and having a passenger load of 20 or more.
4—operated by a commuter air carrier and having a seating configuration, including any vacant pilot seat, of 20 or more.

6102. You have 50 hours of pilot–in–command time in a turboprop–powered category B airplane. How does this experience affect the DH, MDA, and minimum visibility requirements for an instrument approach to Rwy 4L in this type airplane?

CATEGORY	A	B	C	D
S-ILS-4L	312-¾ 300 (300-¾)			312-1 300 (300-1)
S-LOC-4L	400-1 388 (400-1)			

1—The minima remain unchanged.
2—The DH remains 300 feet MSL; the MDA is increased to 700 feet MSL.
3—The DH is 512 feet MSL, visibility 1-3/4 miles; the MDA is 600 feet MSL with 1-1/2 miles visibility.
4—The DH is 412 feet MSL with 1-1/4 miles visibility; the MDA is 500 feet MSL with 1-1/2 miles visibility.

6103. Which is a requirement for life preservers during extended overwater operations? Each life preserver must be equipped with

1—an approved survivor locator light.
2—a dye marker.
3—one flashlight having at least two size "D" cells or equivalent.
4—one sea water desalting kit.

6104. Which is a requirement for passenger–carrying night operations?

1—The takeoff or landing runway must have at least an FAA approved medium–intensity runway light system.
2—A takeoff or landing area may be marked by flare pots if their use is approved by the Administrator.
3—Wind direction for landing may be determined through the pilot's personal observations if an illuminated wind direction indicator is not available.
4—A pilot must establish local ground communications prior to landing.

6105. Which is an operational requirement concerning ice, snow, or frost on structural surfaces?

1—A takeoff may not be made if ice or snow is adhering to the wings or stabilizing or control surfaces.
2—A takeoff may be made with ice, snow, or frost adhering to the wings or stabilizing or control surfaces if anti–icing and deicing equipment is operating.
3—If snow, ice, or frost is adhering to the airplane's lift or control surfaces, but polished smooth, a takeoff may be made.
4—If ice, snow, or frost is adhering to the airplane's lift or control surfaces and is polished smooth, a takeoff may be made although anti–icing and deicing equipment is not operating.

6106. For which airplanes must each flight crewmember station have a shoulder harness installed?

1—All airplanes operated in commuter air carrier service.
2—All airplanes having a passenger seating configuration, excluding any pilot seat, of 10 seats or more.
3—Any airplane being operated under FAR Part 135, regardless of weight and seating configuration.
4—Any airplane powered by a reciprocating or turbine engine, if it has a passenger seating configuration of eight seats or more.

6107. Airborne weather radar equipment must be installed in large transport category airplanes in the conterminous 48 United States

1—and have an alternate electrical supply that activates automatically.
2—and be fully operational although weather forecasts indicate no hazardous conditions.
3—engaged in passenger–carrying operations.
4—engaged in either cargo or passenger–carrying operations.

6108. What is the lowest altitude above the terrain you may use an autopilot during en route operations, if your airplane flight manual specifies a maximum altitude loss of 50 feet for autopilot malfunction under cruise conditions?

1—100 feet.
2—500 feet.
3—1,000 feet.
4—2,000 feet.

6109. Your pilot–in–command time in a particular type turboprop airplane totals 150 hours. How does this affect the DH, MDA, and minimum visibility requirements for an instrument approach?

1—Has no effect.
2—Increases both MDA and DH by 100 feet.
3—MDA or DH and visibility minima are decreased by 100 feet and 1/2 mile, respectively.
4—MDA or DH and visibility minima are increased by 100 feet and 1/2 mile, respectively.

6110. You have 70 hours as pilot in command in a turbine–powered airplane of a particular type. How does this affect the DH, MDA, and minimum visibility requirements for an instrument approach? The MDA or DH

1—remains the same, but the visibility minima are increased by 1/2 mile.
2—and visibility minima are decreased by 100 feet and 1/2 mile, respectively.
3—and visibility minima are increased by 100 feet and 1/2 mile, respectively.
4—is increased by 100 feet, but the visibility minima remain the same.

6111. Your pilot–in–command time in a turbojet–powered airplane of a particular type is 85 hours. How does this affect the DH, MDA, and minimum visibility requirements for an instrument approach?

1—The MDA or DH and visibility minima are increased by 100 feet and 1/2 mile, respectively.
2—The MDA or DH remains the same, but the visibility minima are increased by 1/2 mile.
3—The MDA or DH is increased by 150 feet and the visibility minima are increased by 1/2 mile.
4—The MDA or DH is increased by 200 feet, but the visibility minima remain the same.

6112. Your pilot–in–command time in a turbine–engine–powered, approach Category B airplane of a particular type totals 95 hours. How does this experience affect the landing minima for the ILS and LOC approaches to 14L in this type airplane?

CATEGORY	A	B	C	D
S-ILS 14L	852/18 200 (200-½)			852/20 200 (200-½)
S-LOC 14L	1120/24 468 (500-½)			1120/40 468 (500-¾)
CIRCLING	1160-1 493 (500-1)		1160-1½ 493 (500-1½)	1220-2 553 (600-2)

1—There is no change in the minima.
2—The DH is 952 feet MSL and the visibility is RVR 24; the MDA is 1,220 feet MSL and the visibility is RVR 40.
3—The DH is 952 feet MSL and the visibility is RVR 42; the MDA is 1,220 feet MSL and the visibility is RVR 48.
4—The DH is 952 feet MSL and the MDA is 1,120 feet MSL; the visibility requirements remain the same.

6113. If the weather forecasts require the listing of an alternate airport on an IFR flight, the airplane must carry enough fuel to fly to the first airport of intended landing, then to the alternate, and

1—fly thereafter for a minimum of 30 minutes.
2—make one instrument approach.
3—fly thereafter for a minimum of 20 minutes.
4—fly thereafter for a minimum of 45 minutes.

6114. Assuming the required ceiling exists, an alternate for the destination airport is not required if, for at least 1 hour before and after the ETA, the forecast visibility is at least

1—2 miles, or 1 mile more than the lowest applicable circling minima.
2—5 miles, or 3 miles more than the lowest applicable visibility minima for the instrument approach procedure to be used, whichever is greater.
3—3 miles, or 2 miles more than the lowest applicable visibility minima for the instrument approach procedure to be used, whichever is greater.
4—5 miles, or 3 miles more than the lowest applicable circling minima.

6115. An instrument approach procedure to an airport may not be initiated unless the latest weather report issued by an authorized weather reporting facility indicates that weather conditions

1—exceed the lowest circling minima for that airport.
2—are at or above the circling minima for the runway the pilot intends to use.
3—exceed the straight-in minima for all nonprecision approaches.
4—are at or above the authorized IFR landing minima for that procedure.

6116. The required visibility exists and circling is not authorized. An alternate for the destination airport is not required if, for at least 1 hour before and after the ETA, the forecast ceiling is at least

1—1,500 feet above the lowest published minimum, or 2,000 feet above the airport elevation, whichever is higher.
2—1,000 feet above the lowest MEA, MOCA, or altitude prescribed for the initial approach procedure for the airport.
3—1,000 feet above the lowest published minimum, or 1,500 feet above the airport elevation, whichever is higher.
4—1,500 feet above the lowest MEA, MOCA, or altitude prescribed for the instrument approach procedure for the airport.

6117. After passing the final approach fix on a VOR approach, you receive a weather report indicating the visibility is below prescribed minima. In this situation, you

1—may continue the approach and land, if at the MDA you find the visibility is at least equal to the required minima.
2—should execute an immediate missed approach.
3—should continue the approach to the MDA, and regardless of the visibility you find at that point, execute a missed approach.
4—continue the approach and land regardless of the visibility you observe at the MDA, if prior to beginning the approach, the visibility was reported at or above minima.

6118. A pilot may not designate an airport as an alternate unless it is forecast to be at or above alternate minima at

1—45 minutes after the time of departure.
2—the time of departure.
3—the estimated time of arrival, plus or minus 1 hour.
4—the estimated time of arrival.

6119. Except for takeoff and landing, an airplane may not be operated in non-mountainous terrain at night under VFR, at an altitude below

1—1,000 feet above the highest obstacle or less than 2,000 feet horizontally from the intended course.
2—2,000 feet above the highest obstacle or less than 2,000 feet horizontally from any obstacle.
3—1,000 feet above the highest obstacle within a horizontal distance of 5 miles from the intended course.
4—2,000 feet above the highest obstacle within a horizontal distance of 5 miles from the intended course.

6120. A pilot may not begin an IFR operation unless the next airport of intended landing is forecast to be at or above authorized IFR landing minima at

1—the estimated time of arrival.
2—the estimated time of arrival, plus or minus 1 hour.
3—45 minutes after the time of departure.
4—30 minutes before, until 30 minutes after, the estimated time of arrival.

6121. Excluding approaches, which recent instrument experience must you have to act as second in command of an airplane under IFR in an air taxi operation?

1—2 hours of actual or simulated instrument flight time within the preceding 90 days.
2—2 hours of instrument flight time under actual or simulated instrument flight conditions, or 2 hours in a simulator.
3—2 hours of instrument flight time under actual or simulated instrument flight conditions within the preceding 6 months.
4—6 hours of actual or simulated instrument flight time within the preceding 6 calendar months.

6122. A ground proximity warning system must be installed on all airplanes

1—having two or more engines, being operated in passenger-carrying operations by a commuter air service.
2—engaged in cargo or passenger-carrying operations and being operated by a commuter air service.
3—being operated in passenger-carrying operations and having a seating configuration of 12 seats or more, excluding any pilot seat.
4—powered by turbojet engines and having a seating configuration, excluding any pilot seat, of 10 seats or more.

6123. If the weather forecasts do not require the listing of an alternate airport on an IFR flight, the airplane must carry sufficient fuel to fly to the destination airport and

1—make one missed approach and thereafter have a 20-minute reserve at normal cruising speed.
2—fly thereafter for 45 minutes at normal cruising speed.
3—fly thereafter for 30 minutes at normal cruise.
4— make one missed approach and thereafter have a 45-minute reserve at normal cruising speed.

6124. You have 4,800 hours total, 300 hours instrument, and 94 hours pilot-in-command time in a turboprop category C airplane of a particular type. How does this experience affect the DH, MDA, and minimum visibility requirements for an instrument approach to Rwy 29 in this type airplane?

CATEGORY	A	B	C	D
S-ILS 29	787-¾ 250 (300-¾)			
S-LOC 29	880-¾ 343 (400-¾)			880-1¼ 343 (400-1¼)
CIRCLING	980-1 436 (500-1)	1000-1 456 (500-1)	1000-1½ 456 (500-1½)	1100-2 556 (600-2)

1—The published minima apply.
2—The DH is 837 feet MSL, visibility is 1 mile; MDA is 930 feet MSL, visibility is 1 mile.
3—The DH is 887 feet MSL, visibility is 1-1/4 miles; MDA is 980 feet MSL, visibility is 1-1/4 miles.
4—The DH is 862 feet MSL, visibility is 1-1/2 miles; MDA is 950 feet MSL, visibility is 1-1/2 miles.

6125. During night VFR operations, an airplane must have sufficient fuel to fly to the point of first intended landing, and fly thereafter for at least

1—1 hour at maximum range fuel consumption.
2—45 minutes at normal cruising fuel consumption.
3—30 minutes at maximum endurance fuel consumption.
4—20 minutes at best economy fuel consumption.

6126. You have 150 hours as pilot in command in a turbojet, approach category C airplane of a particular type. How does this experience affect your landing minima for an S-LOC-4R approach in this type airplane?

CATEGORY	A	B	C	D
S-ILS-4R	940-1 321 (400-1)			940-1¼ 321 (400-1¼)
S-LOC-4R	1040-1 421 (500-1)			1040-1½ 421 (500-1½)
CIRCLING	1120-1 501 (600-1)		1120-1½ 501 (600-1½)	1180-2 561 (600-2)

1—The MDA is 1,040 feet MSL and the visibility is 1 mile.
2—The MDA is 1,090 feet MSL and the visibility is 1-1/4 miles.
3—The MDA is 1,120 feet MSL and the visibility is 1-1/2 miles.
4—The MDA is 1,140 feet MSL and the visibility is 1-3/4 miles.

6127. Pilot flight time limitations under FAR Part 135 are based

1—on the flight time accumulated under FAR Part 135 and in any other commercial flying.
2—solely on flight time accumulated in air taxi operations.
3—on the total flight time accumulated.
4—solely on flight time accumulated under FAR Part 135 and FAR Part 121.

6128. During day VFR operations, an airplane must have sufficient fuel to fly to the first point of intended landing and fly thereafter for at least

1—20 minutes at maximum endurance fuel consumption.
2—30 minutes at normal cruising fuel consumption.
3—1 hour at maximum range fuel consumption.
4—45 minutes at best economy fuel consumption.

6129. A takeoff may not be made from an airport that is below the authorized IFR landing minima unless

1—there is an alternate airport with the required IFR landing minima within 45 minutes' flying time.
2—the departure airport is forecast to have the required IFR landing minima within 45 minutes.
3—the departure airport is forecast to have the required IFR landing minima within 1 hour.
4—there is an alternate airport with the required IFR landing minima within 1 hour's flying time.

6130. The planned beginning of an assigned flight is 2 p.m., Monday and its planned completion is 5 p.m., Monday. The pilot in command must have been provided a continuous rest period of

1—10 hours between 5 p.m., Sunday and 5 p.m., Monday.
2—8 hours between 2 p.m., Sunday and 2 p.m., Monday.
3—12 hours between 2 p.m., Sunday and 2 p.m., Monday.
4—8 hours between 5 p.m., Sunday and 5 p.m., Monday.

6131. A pilot may not operate an airplane under VFR in uncontrolled airspace at night when the ceiling is less than 1,000 feet, unless the flight visibility is at least

1—5 miles.
2—3 miles.
3—2 miles.
4—1 mile.

6132. A pilot may not operate an airplane under VFR in uncontrolled airspace during the day when the ceiling is less than 1,000 feet, unless the flight visibility is at least

1—1 mile.
2—2 miles.
3—3 miles.
4—5 miles.

6133. Except for takeoff and landing, an airplane may not be operated during day VFR at an altitude below

1—500 feet above the surface or less than 500 feet horizontally from any obstacle.
2—1,000 feet above the highest obstacle or less than 1,000 feet horizontally from the intended course.
3—500 feet above the surface or less than 1,500 feet horizontally from any obstacle.
4—1,000 feet above the highest obstacle within a horizontal distance of 5 miles from the intended course.

6134. Except for takeoff and landing, an airplane may not be operated in mountainous terrain at night under VFR, at an altitude below

1—2,000 feet above the highest obstacle within a horizontal distance of 5 miles from the intended course.
2—2,000 feet above the surface, or less than 2,000 feet horizontally from any obstacle.
3—1,000 feet above the highest obstacle within a horizontal distance of 5 miles from the intended course.
4—1,000 feet above the surface, or less than 2,000 feet horizontally from any obstacle.

6135. Which is a condition that must be met when a person is administered medical oxygen in flight?

1—The distance between a person using medical oxygen and any electrical unit must not be less than 5 feet.
2—A person using oxygen equipment must be seated to avoid restricting access to or use of any required exit.
3—A person being administered oxygen must be monitored by equipment that displays and records pulse and respiration.
4—A report must be submitted to the supervising FAA Flight Standards district office within 10 days of the date a person is administered medical oxygen.

6136. For which of these aircraft is the "clearway" for a particular runway considered in computing takeoff weight limitations?

1—Turbine-engine-powered transport category airplanes.
2—Large airplanes (more than 12,500 pounds).
3—Passenger-carrying transport category airplanes.
4—Large airplanes operating under FAR Part 135 in commuter air service.

6137. If an aircraft has a passenger seating capacity of 24 seats, how many approved first aid kits are required?

1—None.
2—One.
3—Two.
4—Three.

6138. When a crash axe is required equipment on an aircraft, where should it be located?

1—As close as practicable to an emergency exit.
2—At a location where it is inaccessible to the passengers during normal operations.
3—At a location where it is accessible to both the crew and passengers during normal operations.
4—At a location near the front of the passenger compartment where it is clearly visible to all the occupants.

6139. If previous arrangements have not been made by the operator, where can the procedures be found for servicing the aircraft?

1—FAA approved maintenance program.
2—Certificate holder's director of maintenance.
3—Certificate holder's manual.
4—Part E of the certificate holder's operations specifications.

6140. Which document specifically authorizes a person to operate an aircraft in a particular geographic area?

1—Letter of Authorization.
2—Certificate of designation.
3—Air taxi operating certificate.
4—Operations specifications.

6141. An aircraft may be operated in a foreign country by an FAR Part 135 operator only if authorized to do so by

1—an FAA International Field Office.
2—the ICAO (International Civil Aviation Organization).
3—the foreign country.
4—the U.S. State Department.

6142. A certificate holder must keep copies of completed load manifests for at least

1—30 days.
2—60 days.
3—90 days.
4—1 year.

6143. Before each flight, who is directly responsible for determining the airworthiness status of a mechanical irregularity previously entered in the aircraft maintenance log?

1—Aircraft dispatcher.
2—Line maintenance supervisor.
3—Pilot in command of next flight.
4—Director of maintenance.

6144. Procedures for keeping copies of the aircraft maintenance log in the aircraft and available to appropriate personnel shall be set forth in the

1—certificate holder's manual.
2—aircraft maintenance procedures handbook.
3—Part D of the operations specifications.
4—operator's daily maintenance release.

6145. Which document must an FAA Inspector present to the pilot in command to gain access to the pilot compartment of an airplane operating under FAR Part 135?

1—DOT Form 1600, Identification Card.
2—FAA Form 110A, Aviation Safety Inspector Credential.
3—Letter of Authorization for the certificate holder.
4—Letter of Authorization from the supervising FAA district office.

6146. Where is the certificate holder required to list the name and title of each person authorized to exercise operational control for a particular flight?

1—Part B of the certificate holder's Operations Specifications.
2—FAA Form 8000-6, Application for ATCO Certificate.
3—Attached to the load manifest for that flight.
4—Certificate holder's manual.

6147. If an operator uses oxygen equipment other than a type approved by Federal Aviation Regulations, in a medical emergency, a complete report must be sent to the

1—FAA district office.
2—nearest FAA Flight Service Station.
3—patient's attending physician.
4—National Transportation Safety Board.

6148. Before takeoff, the pilot in command of a passenger-carrying airplane shall ensure that all passengers have been orally briefed on the normal and emergency use of oxygen

1—if the flight involves operations at or above 10,000 feet MSL for more than 30 minutes.
2—regardless of the altitude at which the flight will operate.
3—if the flight involves operations above 12,000 feet MSL.
4—if the flight involves operations at or above 10,000 feet MSL for more than 1 hour.

6149. The oral preflight briefing required on passenger-carrying airplanes shall be

1—supplemented by an actual demonstration of emergency exit door operation by a crewmember.
2—presented in person by the pilot in command while another flight crewmember demonstrates the operation of emergency equipment.
3—conducted by the pilot in command or a crewmember and supplemented by printed cards for the use of each passenger.
4—supplemented by a demonstration of the location of emergency equipment, and if the flight is to be at or above 10,000 feet MSL, the use of oxygen.

6150. A flight attendant crewmember is required in

1—all large airplanes.
2—any airplane in commuter air carrier service.
3—any aircraft having a passenger seating configuration of more than 19, excluding any pilot seat.
4—all turbojet airplanes in passenger-carrying service.

6151. To operate a multiengine airplane with certain equipment inoperative under the provisions of a minimum equipment list, what document must be carried within the airplane?

1—Letter from the Regional Airworthiness Office authorizing such operation.
2—Waiver letter from the airplane manufacturer.
3—Letter from the certificate holder's director of maintenance authorizing the operation.
4—Letter of Authorization issued by the FAA district office having certification responsibility.

6152. Which condition must be met to conduct IFR operations from an airport that is not at the location where weather observations are made?

1—The Administrator must issue operations specifications that permit the procedure.
2—The operator must coordinate with the U.S. National Weather Service to assure that valid observations are forwarded to the pilot.
3—A "Letter of Waiver" authorizing the procedure must be issued by the U.S. National Weather Service.
4—An "Authorization Letter" permitting the procedure must be issued to the operator by the supervising FAA district office.

6153. The planned beginning of an assigned flight is 8 a.m. and its planned completion is 11 a.m. The pilot in command must have had a rest period of at least

1—8 consecutive hours during the 24-hour period prior to 8 a.m.
2—10 consecutive hours during the 24-hour period prior to 11 a.m.
3—10 consecutive hours during the 24-hour period prior to 8 a.m.
4—8 consecutive hours during the 24-hour period prior to 11 a.m.

6154. Which is not an approved weather source for use in determining if an airport is at or above authorized IFR landing minima?

1—U.S. National Weather Service.
2—Source approved by the Administrator.
3—Source approved by the certificate holder.
4—Source approved by the U.S. National Weather Service.

6155. Which requirement applies when oxygen is stored in liquid form?

1—Liquified oxygen is a hazardous material and must be kept in an isolated storage facility.
2—The equipment used to store liquid oxygen must be included in the certificate holder's approved maintenance program.
3—Smoking is not permitted within 50 feet of stored liquid oxygen.
4—The temperature of the storage facility for liquid oxygen must be no higher than +45° F.

6156. A pilot may make an IFR departure from an airport that does not have an approved standard instrument approach procedure if the

1—pilot in command has more than 100 hours in the type airplane being operated.
2—certificate holder holds a waiver from ATC approving the procedure.
3—certificate holder has been issued operations specifications by the Administrator approving the procedure.
4—departure airport is within 30 minutes or less flying time of another airport that has an approved standard instrument approach procedure.

6157. Which is one required condition for a pilot to take off under IFR with less than standard takeoff minima at an airport where a straight–in instrument approach procedure is authorized and there is an approved weather reporting source?

1—The pilot must have at least 100 hours as pilot in command in the type airplane to be flown.
2—The airplane flown must have dual VOR/LOC receiving equipment.
3—Visibility at time of takeoff must be at least RVR 16.
4—Wind direction and velocity must be such that a straight–in approach can be made to the runway served by the procedure.

6158. If a certificate holder makes arrangements for another person to perform aircraft maintenance, that maintenance shall be performed in accordance with the

1—procedures and standards set forth by the certificate holder's director of maintenance.
2—certificate holder's manual and FAR Parts 43, 91, and 135.
3—provisions of a contract prepared by the certificate holder and approved by the supervising FAA district office.
4—provisions and standards outlined in the certificate holder's aircraft maintenance handbook.

6159. A certificate holder must have "exclusive use" of

1—at least one aircraft for each operation authorized in the certificate holder's manual.
2—each aircraft that meets the requirements of the specific operations authorized in the certificate holder's operations specifications.
3—at least one aircraft that meets the requirements of at least one kind of operation authorized in the certificate holder's operations specifications.
4—the aircraft used by the certificate holder that meets the requirements of the operations authorized by the operating certificate.

6160. What performance is required of a multieng airplane with the critical engine inoperative, while carry passengers for hire in IFR weather conditions?

1—Climb at least 100 feet a minute at the highest MEA the route to be flown or 3,000 feet MSL, whichever higher.
2—Maintain altitude at the highest MEA of the route be flown or 3,000 feet MSL, whichever is higher.
3—Climb at least 50 feet a minute at the MEA's of route to be flown or 5,000 feet MSL, whichever higher.
4—Maintain altitude at the highest MEA of the route be flown or 5,000 feet MSL, whichever is higher.

6161. What performance is required of a multieng airplane with the critical engine inoperative, while carry passengers for hire over–the–top of solid stratus clo layer?

1—Climb at least 50 feet a minute at the MEA's of route to be flown or 5,000 feet MSL, whichever higher.
2—Maintain altitude at the highest MEA of the route be flown or 3,000 feet MSL, whichever is higher.
3—Climb at least 200 feet a minute at the highest MEA the route to be flown or 3,000 feet MSL, whichever higher.
4—Maintain altitude at the highest MEA of the route be flown or 5,000 feet MSL, whichever is higher.

6162. You have 75 hours and 30 landings as pilot command in a turbine–engine–powered airplane of certain type. If Los Angeles International is destination airport, what are the MDA and minim visibility requirements to execute the side–step maneu to land on Rwy 25R? (See Figure 1. The airplane approach category D.)

1—MDA 820 feet MSL; visibility 2-1/2 miles.
2—MDA 720 feet MSL; visibility RVR 75.
3—MDA 560 feet MSL; visibility RVR 65.
4—MDA 1,020 feet MSL; visibility 3 miles.

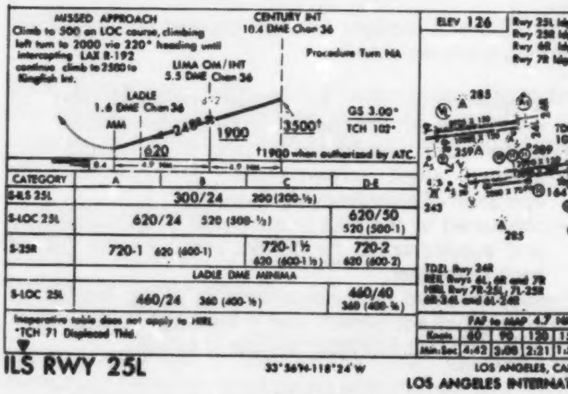

MISSED APPROACH
Climb to 500 on LOC course, climbing left turn to 2000 via 220° heading until intercepting LAX R-192 continue climb to 2500 to Kingfish Int.
CENTURY INT
10.4 DME Chan 36
Procedure Turn NA
LIMA OM/INT
5.5 DME Chan 36
LADLE
1.6 DME Chan 36
MM
620
1900
3500†
GS 3.00°
TCH 102*
†1900 when authorized by ATC.
CATEGORY
A
B
C
D-E
S-ILS 25L
300/24
200 (200-½)
S-LOC 25L
620/24
520 (500-½)
620/50
520 (500-1)
S-25R
720-1
620 (600-1)
720-1½
620 (600-1½)
720-2
620 (600-2)
LADLE DME MINIMA
S-LOC 25L
460/24
360 (400-½)
460/40
360 (400-¾)
Inoperative table does not apply to HIRL
*TCH 71 Displaced Thld.
ELEV 126
TDZL Rwy 24R
REIL Rwys 6L, 6R and 7R
HIRL Rwy 7R-25L, 7L-25R
6R-24L and 6L-24R
FAF to MAP 4.7
Knots 60 90 120
Min:Sec 4:42 3:08 2:21
ILS RWY 25L
33°56'N-118°24'W
LOS ANGELES, CA
LOS ANGELES INTERNAT

Figure 1

6163. You have 90 hours as pilot in command in a turbine-engine-powered airplane of a certain type. What are the MDA and minimum visibility requirements for a side-step maneuver to land on Rwy 25R? (See Figure 1. Los Angeles International is the destination airport; the airplane is approach category C.)

1—MDA 820 feet MSL; visibility 2-1/2 miles.
2—MDA 720 feet MSL; visibility 1-3/4 miles.
3—MDA 820 feet MSL; visibility 2-1/4 miles.
4—MDA 560 feet MSL; visibility RVR 50.

6164. What minimum forecast weather conditions at Miami International, your destination, would not require filing an alternate airport on your IFR flight plan? (See Figure 2. The airplane is approach category D and a circling approach is not authorized.)

1—Ceiling 1,900 feet; visibility 3-1/4 miles.
2—Ceiling 2,000 feet; visibility 3 miles.
3—Ceiling 2,000 feet; visibility 3-1/4 miles.
4—Ceiling 1,420 feet; visibility 3 miles.

6165. What is the purpose of the VDP (Visual Descent Point) for the VOR RWY 12 at Miami International? (See Figure 2.)

1—To provide a point for the pilot to level-off after descent to the MDA.
2—To provide a point from which normal descent from the MDA may be commenced, if visual references are established.
3—To provide a visual checkpoint for the pilot to initiate descent from the MDA during a straight-in or circling approach.
4—To provide a visual confirmation of the MDA for the pilot.

6166. What type altitude is indicated at the FAF for the VOR RWY 12 approach at Miami International? (See Figure 2.)

1—Mandatory.
2—Maximum.
3—Minimum.
4—Recommended.

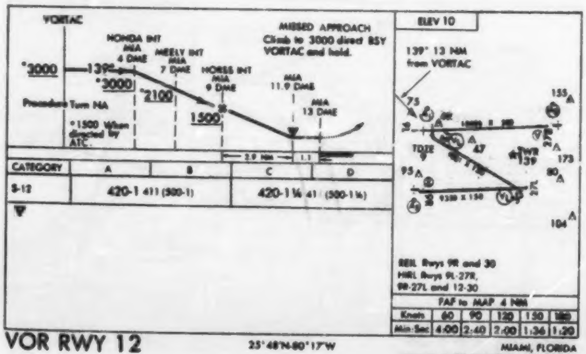

VORTAC
HONDA INT
MIA
4 DME
MEELY INT
MIA
7 DME
HORSS INT
MIA
9 DME
MIA
11.9 DME
MIA
13 DME
MISSED APPROACH
Climb to 3000 direct BSY VORTAC and hold.
*3000
139°
*3000
*2100
1500
Procedure Turn NA
*1500 When directed by ATC.
2.9 NM
1.1
CATEGORY
A
B
C
D
S-12
420-1 411 (500-1)
420-1¼ 411 (500-1¼)
▼
ELEV 10
139° 13 NM from VORTAC
75
155
47
TDZE 9
TWR 139
173
95
80
104
9330 X 150
REIL Rwys 9R and 30
HIRL Rwys 9L-27R, 9R-27L and 12-30
FAF to MAP 4 NM
Knots 60 90 120 150 180
Min:Sec 4:00 2:40 2:00 1:36 1:20
VOR RWY 12
25°48'N-80°17'W
MIAMI, FLORIDA
MIAMI INTERNATIONAL (MIA)

Figure 2

6167. What does the symbol ▼ in the minima section indicate for Miami International? (See Figure 2.)

1—Instrument takeoff is not authorized on Rwy 12.
2—Takeoff minima are 1 mile for airplanes having two engines or less and 1/2 mile for those having more than two engines.
3—Takeoff minima are not standard and/or departure procedures are published.
4—Takeoff minima are 800 feet and 2 miles.

6168. What minimum forecast weather conditions at Tallahassee Municipal, your destination, would not require filing an alternate airport on your IFR flight plan? Your airplane is approach category C and /T equipped. Tallahassee Approach Control radar is NOTAMed out of service. (See Figure 3.)

1—Ceiling 2,100 feet; visibility 3-1/2 miles.
2—Ceiling 2,000 feet; visibility 3 miles.
3—Ceiling 1,600 feet; visibility 1-1/2 miles.
4—Ceiling 2,200 feet; visibility 3-3/4 miles.

6169. Your airplane is approach category C and /U equipped. Tallahassee Approach Control radar is NOTAMed out of service. What is the HAT for the VOR RWY 18 approach at Tallahassee? (See Figure 3.)

1—519 feet.
2—639 feet.
3—540 feet.
4—659 feet.

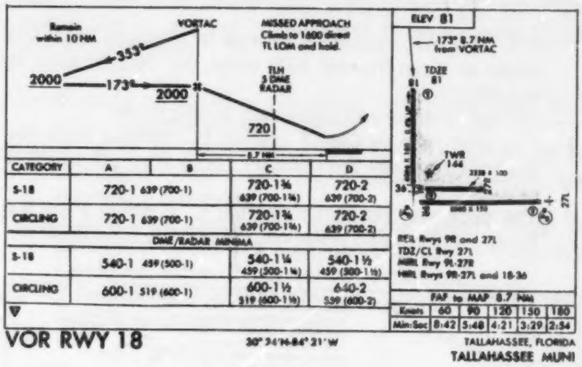

Remain within 10 NM
VORTAC
MISSED APPROACH
Climb to 1600 direct TL LOM and hold.
353°
2000
173°
2000
TLH
3 DME
RADAR
720
8.7 NM
CATEGORY
A
B
C
D
S-18
720-1 639 (700-1)
720-1¾ 639 (700-1¾)
720-2 639 (700-2)
CIRCLING
720-1 639 (700-1)
720-1¾ 639 (700-1¾)
720-2 639 (700-2)
DME/RADAR MINIMA
S-18
540-1 459 (500-1)
540-1¼ 459 (500-1¼)
540-1½ 459 (500-1½)
CIRCLING
600-1 519 (600-1)
600-1½ 519 (600-1½)
640-2 559 (600-2)
▼
ELEV 81
173° 8.7 NM from VORTAC
TDZE 81
81
TWR 144
36
27L
REIL Rwys 9R and 27L
TDZ/CL Rwy 27L
MIRL Rwy 9L-27R
HIRL Rwys 9R-27L and 18-36
FAF to MAP 8.7 NM
Knots 60 90 120 150 180
Min:Sec 8:42 5:48 4:21 3:29 2:54
VOR RWY 18
30°24'N-84°21'W
TALLAHASSEE, FLORIDA
TALLAHASSEE MUNI

Figure 3

6170. What minimum forecast weather conditions at Panama City–Bay County, your destination, would not require filing an alternate airport on your IFR flight plan? (See Figure 4. The airplane is approach category D.)

1—Ceiling 2,200 feet; visibility 4–1/4 miles.
2—Ceiling 700 feet; visibility 2–1/2 miles.
3—Ceiling 2,200 feet; visibility 3 miles.
4—Ceiling 1,000 feet; visibility 3 miles.

6171. What are the approach and landing minima for a category B airplane, straight–in VOR RWY 14 approach, when the control zone is not effective and Tyndall AFB altimeter setting is not available? (See Figure 4.)

1—440 - 1/2.
2—460 - 1-1/2.
3—Procedure not authorized for any operator.
4—Procedure approved only for operators with approved weather reporting service.

6172. What is the touchdown zone elevation for the VOR RWY 14 approach at Panama City–Bay County? (See Figure 4.)

1—20 feet.
2—32 feet.
3—5 feet.
4—13 feet.

6173. What procedure is provided for a pilot to control the intensity of the approach lights for a VOR RWY 14 approach at Panama City–Bay County? (See Figure 4.)

1—The pilot may request a change in intensity from the tower or from Tyndall AFB when the control zone is not effective.
2—The lights are controllable only by the tower.
3—The pilot may request a change in intensity from the tower or may key the mike on 120.5 after the tower is closed.
4—The pilot may request a change in intensity from the tower, or from FSS if the control zone is not effective.

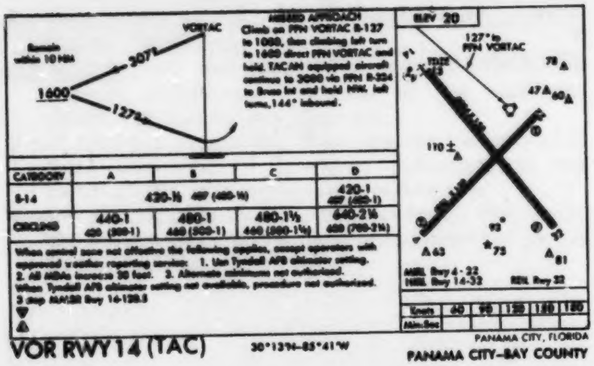

VORTAC
Remain within 10 NM
307°
1600
127°
MISSED APPROACH
ELEV 20
127° to PFN VORTAC
110±
CATEGORY
A
B
C
D
S-14
420-½
420-1
CIRCLING
440-1
480-1
480-1½
640-2¼
63
73
81
VOR RWY14 (TAC)
30°13'N-85°41'W
PANAMA CITY, FLORIDA
PANAMA CITY–BAY COUNTY

Figure 4

6174. Which runways at Atlanta International have Visual Approach Slope Indicators? (See Figure 5.)

1—26, 27R, and 27L.
2—27L only.
3—27R only.
4—08, 27L, and 09R.

6175. What minimum forecast weather conditions a Atlanta International, your destination, would not requir filing an alternate airport on your IFR flight plan? (Se Figure 5. The airplane is approach category D.)

1—Ceiling 2,000 feet; visibility 3–1/2 miles.
2—Ceiling 1,500 feet; visibiity 1–1/2 miles.
3—Ceiling 2,000 feet; visibility 3 miles.
4—Ceiling 2,000 feet; visibility 2–3/4 miles.

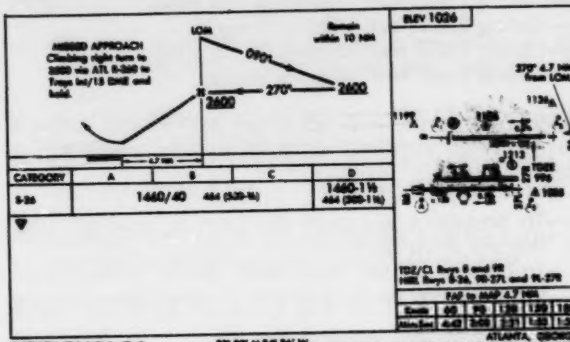

MISSED APPROACH
LOM
Remain within 10 NM
090°
270°
2600
2600
ELEV 1026
CATEGORY
A
B
C
D
S-26
1460/40
1460-1½
FAF to MAP 4.7 NM
NDB RWY 26
THE WILLIAM B. HARTSFIELD ATLANTA INTL

Figure 5

6176. What minimum forecast weather conditions a Pensacola Regional, your destination, would not requir filing an alternate airport on your IFR flight plan? (Se Figure 6. The airplane is approach category C.)

1—Ceiling 1,600 feet; visibility 1–1/2 miles.
2—Ceiling 2,000 feet; visibility 3–1/2 miles.
3—Ceiling 2,000 feet; visibility 3 miles.
4—Ceiling 2,100 feet; visibility 3 miles.

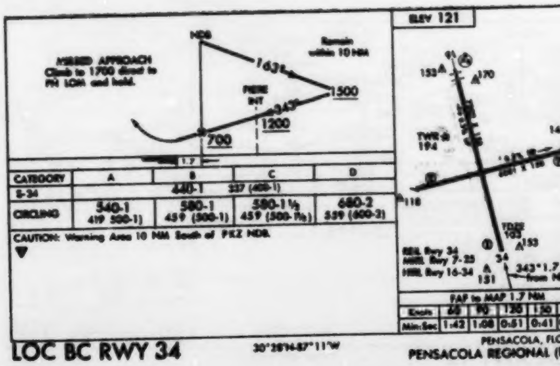

NDB
MISSED APPROACH
Climb to 1700 direct to PN LOM and hold.
Remain within 10 NM
163°
343°
1500
1200
700
1.7
ELEV 121
TWR 194
CATEGORY
A
B
C
D
S-34
440-1
CIRCLING
540-1
580-1
580-1½
680-2
CAUTION: Warning Area 10 NM South of PXZ NDB.
FAF to MAP 1.7 NM
Knots
Min:Sec
1:42
1:08
0:51
0:41
LOC BC RWY 34
30°28'N-87°11'W
PENSACOLA REGIONAL

Figure 6

6177. What is the touchdown zone elevation and HAT for the LOC BC RWY 34? (See Figure 6.)

1—103 and 337 feet.
2—153 and 419 feet.
3—103 and 400 feet.
4—153 and 459 feet.

6178. What is the threshold crossing height for the ILS RWY 35R approach at Abilene? (See Figure 7.)

1—200 feet.
2—15 feet.
3—100 feet.
4—57 feet.

6179. Immediately after intercepting the glide slope during an ILS approach to Rwy 35R at Abilene, the glide slope indication is lost. At which point should a missed approach be executed if the required visual references cannot be established? (See Figure 7.)

Groundspeed..120 knots
Airplane Approach Category..B

1—When 2 minutes 42 seconds past the LOM.
2—When reaching the appropriate MDA, regardless of time.
3—Immediately upon confirmation that the glide slope indication has been lost.
4—Upon receiving the middle marker.

6180. Which approach lighting system is installed for Rwy 35R at Abilene? (See Figure 7.)

1—SSALR.
2—ALFS-2.
3—MALS.
4—MALSR.

6181. What is the maximum landing distance for a turbojet small transport category airplane if the effective length of the most favorable runway of the airport to be used as an alternate is 8,000 feet?

1—7,200 feet.
2—6,400 feet.
3—5,600 feet.
4—4,800 feet.

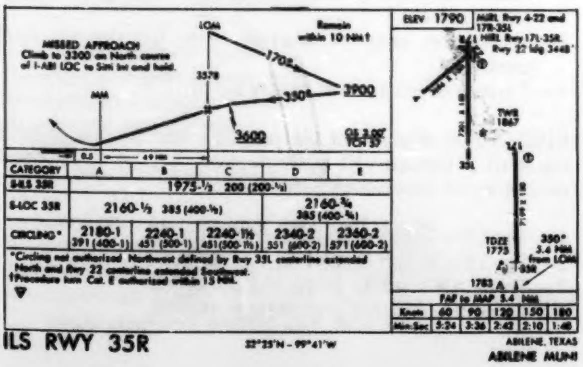


Figure 7

6182. What is the maximum landing distance for a turbine-engine-powered small transport category airplane if the effective length of the most favorable runway of the destination airport is 7,000 feet?

1—4,200 feet.
2—4,900 feet.
3—5,600 feet.
4—6,300 feet.

6183. Which approach lighting system is installed for Rwy 13R at Brownsville International Airport? (See Figure 8.)

1—SALS with REIL.
2—MALSR.
3—ALSF.
4—SSALR with RAIL.

6184. Immediately after intercepting the glide slope during an ILS approach to Rwy 13R at Brownsville, the glide slope indication is lost. At which point should a missed approach be executed if the required visual references cannot be established? (See Figure 8.)

Groundspeed..90 knots
Airplane approach category..B

1—Immediately upon confirmation that the glide slope indication is lost.
2—When 4 minutes past the LOM.
3—Upon receiving the middle marker.
4—Upon reaching 380 feet MSL, regardless of time.

6185. What instrument time experience must you have had to act as second in command of an airplane for an IFR air taxi flight?

1—6 hours of actual or simulated instrument flight time within the preceding 6 months.
2—3 hours of instrument flight time under actual or simulated instrument flight conditions within the preceding 6 months.
3—2 hours of instrument flight time under actual or simulated instrument flight conditions, or 4 hours in a simulator, within the preceding 6 months.
4—3 hours of actual or simulated instrument flight time within the preceding 90 days.

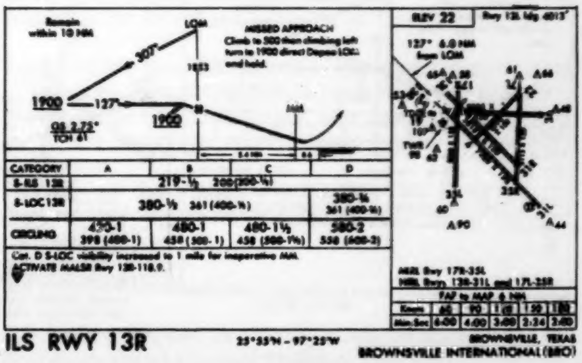


Figure 8

6186. Which approach and runway lights are available for Rwy 34 at Easterwood Field? (See Figure 9.)

1—MALSR; medium-intensity runway lights.
2—SSALR with RAIL; high-intensity runway lights.
3—MALS with sequenced flashers; REIL.
4—SALS with RAIL; medium-intensity runway lights.

6187. Immediately after intercepting the glide slope during an ILS approach to Rwy 34 at College Station, the glide slope indication is lost. At which point should a missed approach be executed if the required visual references cannot be established? (See Figure 9.)

Groundspeed..120 knots
Airplane approach category..B

1—Immediately upon confirmation that the glide slope indication is lost.
2—Upon receiving the middle marker.
3—When reaching 600 feet MSL, regardless of time.
4—When 2 minutes 45 seconds past the LOM.

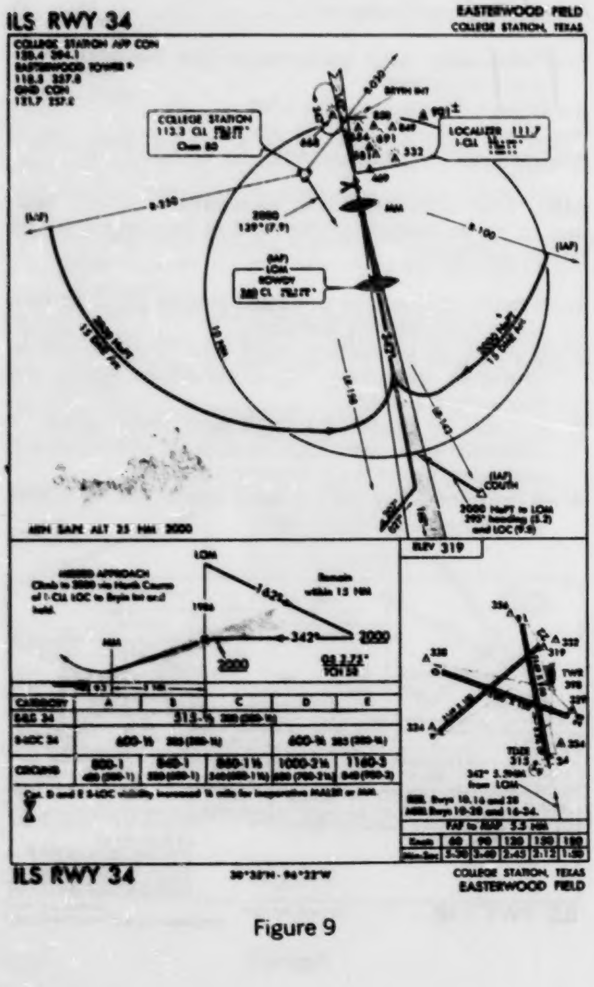


Figure 9

6188. What are the altitude minima for the S-LOC 34 approach to Easterwood Field with the conditions listed? (See Figure 9.)

Last assigned altitude...3,000 feet

Cleared for approach at COUTH Intersection

1—3,000 feet until established on localizer; 2,000 feet to the LOM; MDA 515 feet.
2—3,000 feet until established on localizer; 2,000 feet to the FAF; MDA 600 feet.
3—2,000 feet from COUTH Intersection to the localizer; 2,000 feet to the LOM; MDA 515 feet.
4—2,000 feet from COUTH Intersection to the localizer; 2,000 feet to the LOM; MDA 600 feet.

6189. The effective length of the most favorable runway at a certain airport is 8,600 feet. The maximum landing distance permitted for a large turbopropeller-powered airplane to list this airport as an alternate is

1—5,160 feet.
2—6,020 feet.
3—6,880 feet.
4—7,740 feet.

6190. What is the minimum recent instrument experience for a pilot to act as second in command on an air taxi IFR flight?

1—6 hours of instrument flight time in same category in last 6 months and six instrument approaches in last 3 months.
2—3 hours of instrument flight time in same category in last 6 months; 3 hours of other instrument time in last 6 months; three instrument approaches in last 3 months.
3—6 hours of instrument flight time in same category in last 6 months and three instrument approaches in last 6 months.
4—3 hours of instrument flight time in same category in last 6 months; 3 hours of other instrument time in last 6 months; six instrument approaches in last 6 months.

6191. An airline transport pilot instructing other pilots in air transportation service is restricted to

1—30 hours of instruction in any 7-day period.
2—instruction in any aircraft of the category for which a rating is held.
3—instruction only in aircraft with functioning dual controls.
4—7 hours of instruction in any 1 day.

6192. To be eligible for the practical test for the original issue of a Category II authorization, a pilot must meet which recent experience requirement?

1—Six ILS's within preceding 6 months.
2—Six ILS's within preceding 12 months.
3—Three ILS's within preceding 3 months.
4—Three ILS's within preceding 6 months.

6193. To satisfy the instrument approach recency experience requirement, a second in command must have made at least

1—six approaches within the past 6 months; three must have been in the category aircraft to be flown.
2—six approaches within the past 6 months in any airplane, helicopter, approved instrument ground trainer, or simulator.
3—three approaches within the past 90 days in the category and class aircraft to be flown.
4—three approaches within the past 90 days in an airplane, helicopter, approved instrument ground trainer, or simulator.

6194. To meet the instrument time experience for second-in-command currency in an airplane, at least 3 hours must have been obtained in

1—the same class airplane as the one to be flown.
2—an airplane under actual or simulated IFR conditions.
3—an aircraft in actual IFR conditions.
4—an aircraft under actual or simulated IFR conditions.

6195. To be eligible for the practical test for the original issue of a Category II authorization, what recent experience is required?

1—Within the previous 12 months, six ILS approaches flown manually to the Category I DH.
2—Within the previous 6 months, three ILS approaches flown by use of an approach coupler to the Category II DH.
3—Within the previous 12 calendar months, six ILS approaches flown by use of an approach coupler to the Category I or Category II DH.
4—Within the previous 6 months, six ILS approaches, three of which may be flown to the Category I DH by use of an approach coupler.

6196. An airline transport pilot is instructing other pilots in air transportation service. Instruction is restricted to

1—a maximum of 6 hours in any 1 day.
2—those aircraft in which the pilot holds a category, class, and type rating.
3—a maximum of 30 hours in any 7-day period.
4—a school conducted by a certificated air carrier.

6197. FAR Part 1 defines V_1 as

1—takeoff decision speed.
2—critical engine failure speed.
3—minimum unstick speed.
4—takeoff safety speed.

6198. FAR Part 1 defines V_{LE} as

1—maximum landing gear extended speed.
2—maximum landing gear operating speed.
3—maximum speed in landing configuration.
4—maximum speed in steady flight with critical engine inoperative and landing gear extended.

6199. A pilot, acting as second in command, successfully completes the instrument competency check specified in FAR Part 61. How long does this pilot remain current if no further IFR flights are made?

1—12 months.
2—60 days.
3—90 days.
4—6 months.

6200. What restriction is imposed regarding flight instruction of other pilots in air transportation service by an airline transport pilot?

1—6 hours in any 1-day period.
2—30 hours in any 7-day period.
3—7 hours in any 1-day period.
4—36 hours in any 7-day period.

6201. An airline transport pilot may log as pilot-in-command time

1—all the flight time during which the pilot acts as pilot in command.
2—only the flight time during which the pilot is the sole manipulator of the controls.
3—all the flight time during which the pilot is required to be on the flight deck as a crewmember.
4—all the flight time the pilot acts as pilot in command or second in command in FAR Parts 135 or 121 operations.

6202. To act as second in command for an IFR air taxi flight, your recent instrument experience must include at least

1—2 hours of instrument flight time under actual or simulated instrument flight conditions within the preceding 6 months.
2—2 hours of actual or simulated instrument flight time within the preceding 90 days.
3—6 hours of actual or simulated instrument flight time within the preceding 6 months.
4—2 hours of instrument flight time under actual or simulated instrument flight conditions, or 2 hours in a simulator, within the preceding 6 months.

6203. What instrument flight time may be logged by the second in command of a two-pilot air taxi flight?

1—All of the time the second in command is controlling the airplane solely by reference to flight instruments.
2—All of the time the airplane is in acutal IFR conditions or the second in command is using a view-limiting device.
3—One-half the time the flight is on an IFR flight plan.
4—One-half the time the airplane is in actual IFR conditions.

6204. FAR Part 1 defines V_{FE} as

1—maximum speed for stability characteristics.
2—design speed for maximum gust intensity.
3—design flap speed.
4—maximum flap extended speed.

6205. What minimum conditions apply to the six instrument approaches required of a second in command for instrument currency?

1—The approaches may be made in either an aircraft or an approved instrument ground trainer.
2—At least three of the six approaches must be made in an aircraft.
3—At least three of the six approaches must be made in the same category of aircraft to be flown.
4—At least three of the six approaches must be made in the same category and class of aircraft to be flown.

6206. At what maximum indicated airspeed can a reciprocating engine airplane operate in the airspace underlying a terminal control area?

1—156 knots.
2—180 knots.
3—200 knots.
4—230 knots.

6207. Which recent flight experience must a second in command obtain to maintain instrument currency in an airplane?

1—3 hours of actual or simulated instrument time in the same class airplane.
2—3 hours of actual or simulated instrument time in an airplane.
3—3 hours of actual instrument time.
4—3 hours of instrument time in IFR conditions in the same category aircraft.

6208. While in controlled airspace in VFR conditions, what distance from clouds should be maintained when flying more than 1,200 feet AGL, but below 10,000 feet MSL?

1—1,000 feet below; 500 feet above; 2,000 feet horizontal.
2—500 feet below; 500 feet above; 1,000 feet horizontal.
3—1,000 feet below; 1,000 feet above; 1 mile horizontal.
4—500 feet below; 1,000 feet above; 2,000 feet horizontal.

6209. What action is appropriate if ATC issues a clearance but the pilot is uncertain of the meaning?

1—Request a "full route clearance" from ATC.
2—Comply with the clearance as much as possible.
3—Contact the company via the aircraft dispatcher for an interpretation.
4—Immediately request a clarification from ATC.

6210. What is the maximum indicated airspeed a reciprocating-engine-powered airplane may be operated within a TCA?

1—180 knots.
2—200 knots.
3—230 knots.
4—250 knots.

6211. A commercial operator plans to ferry a large, four-engine, reciprocating-engine-powered airplane from one facility to another to repair an inoperative engine. Which is an operational requirement for the three-engine flight?

1—Weather conditions at the takeoff and destination airports must be VFR.
2—The gross weight at takeoff may not exceed 75 percent of the maximum certificated gross weight.
3—Any takeoff must be from a dry runway.
4—The computed takeoff distance to reach V_1 must not exceed 70 percent of the effective runway length.

6212. While in controlled airspace in VFR conditions, what in-flight visibility is required when flying more than 1,200 feet AGL, and at or above 10,000 feet MSL?

1—1 nautical mile.
2—2 statute miles.
3—3 nautical miles.
4—5 statute miles.

6213. When operating to an airport with an operating control tower, each pilot of a large airplane shall, unless otherwise required by the applicable distance from cloud criteria, enter the airport traffic area and maintain an altitude above the airport surface of at least

1—700 feet.
2—1,200 feet.
3—1,500 feet.
4—2,000 feet.

6214. You are given a priority clearance by an ATC facility because of an in-flight emergency. ATC requests a detailed report. This report must be submitted within

1—48 hours to the chief of that ATC facility.
2—10 days to the FAA Administrator.
3—7 days to the chief of the National Transportation Safety Board.
4—24 hours to the nearest FAA Flight Standards Inspector.

6215. While in controlled airspace in VFR conditions, what distance from clouds should be maintained when flying more than 1,200 feet AGL, and at or above 10,000 feet MSL?

1—500 feet below; 1,000 feet above; 2,000 feet horizontal.
2—1,000 feet below; 1,000 feet above; 1 statute mile horizontal.
3—1,000 feet below; 500 feet above; 2,000 feet horizontal.
4—500 feet below; 1,000 feet above; 1 statute mile horizontal.

6216. At what maximum indicated airspeed can a large turbine-powered airplane operate within a TCA without special ATC authorization?

1—275 knots.
2—250 knots.
3—230 knots.
4—200 knots.

6217. What is the procedure for reporting a malfunction of required DME equipment which occurs above 24,000 feet?

1—Notify ATC of the malfunction and land at the nearest airport where repairs can be made.
2—Notify ATC immediately and request an altitude below 24,000 feet.
3—Continue to your destination, but request an altitude below 24,000 feet.
4—Notify ATC immediately, but continue to the next airport of intended landing where repairs can be made.

6218. Which airspace requires filing an IFR flight plan?

1—Continental control area, terminal control areas, and airspace with IFR conditions.
2—Any airspace when the visibility is less than 1 mile.
3—Any airspace above 700 feet, or 1,200 feet where designated, if the visibility is less than 1 mile.
4—Controlled airspace with IFR weather conditions and positive control area.

6219. What is the maximum indicated airspeed a turbine-powered aircraft may be operated below 10,000 feet MSL?

1—288 knots.
2—250 knots.
3—230 knots.
4—200 knots.

6220. Which operational requirement must be observed when ferrying a large, turbine-engine-powered airplane when one of its three engines is inoperative?

1—The weather conditions at takeoff and destination must be VFR.
2—The flight cannot be conducted between official sunset and official sunrise.
3—Weather conditions must exceed the basic VFR minima for the entire route, including takeoff and landing.
4—The computed takeoff run must not exceed 50 percent of the available runway; the computed landing distance must not exceed 60 percent of the available runway.

6221. What maximum speed may be used for an airplane with reciprocating engines during that phase of the arrival below 10,000 feet?

1—250 knots to the boundary of the airport traffic area, then 156 knots.
2—250 knots to the boundary of the control zone, then 190 knots.
3—200 knots to the boundary of the control zone, then 180 knots.
4—200 knots to the boundary of the TCA, then 156 knots.

6222. While in controlled airspace in VFR conditions, what distance from clouds should be maintained when flying more than 1,200 feet AGL, but below 10,000 feet MSL?

1—500 feet below; 1,000 feet above; 2,000 feet horizontal.
2—1,000 feet below; 1,000 feet above; 1 mile horizontal.
3—500 feet below; 500 feet above; 1,000 feet horizontal.
4—1,000 feet below; 500 feet above; 2,000 feet horizontal.

6223. What action should a pilot take when a clearance is received from ATC that appears to be contrary to a regulation?

1—Accept the clearance, since it was issued by ATC.
2—Read the clearance back in its entirety.
3—Request a clarification from ATC.
4—Tell ATC that you will not accept the clearance.

6224. A four-engine turbine-powered airplane used by a commercial operator must be ferried to another base for repair of an inoperative engine. Which operational requirement must be observed?

1—Only the required flight crewmembers may be on board the airplane.
2—The computed takeoff distance to reach V_1 must not exceed 70 percent of the available runway determined with all engines operating.
3—The existing and forecast weather for departure, en route, and landing must be VFR.
4—The takeoff weight must not exceed 65 percent of the maximum certificated takeoff weight.

6225. Where are IFR flight operations required during VFR weather conditions?

1—Positive control area.
2—Group III TCA.
3—Continental control area and Stage III TRSA.
4—Group I TCA.

6226. As pilot in command, which action should you take if it becomes necessary to deviate from a clearance due to an emergency?

1—Send a detailed explanation to the FAA Administrator within 10 days.
2—Notify ATC of the deviation as soon as possible.
3—Submit a full report to the National Transportation Safety Board within 48 hours.
4—Notify the nearest FAA district office within 24 hours.

6227. At what maximum indicated airspeed may a reciprocating-engine-powered airplane be operated within an airport traffic area?

1—156 knots.
2—180 knots.
3—200 knots.
4—230 knots.

6228. What equipment, in addition to that basic equipment necessary for Category II operations, meets the minimum requirements for Category II decision heights below 150 feet?

1—Aural and visual indications of the inner marker location must be provided.
2—Dual radio altimeter systems.
3—Dual glide slope and localizer receiving antenna.
4—Low altitude alert warning system.

6229. Two-way radio communications failure occurs while in IFR conditions. Which route should you fly in absence of an ATC assigned route or a route ATC has advised to expect in a further clearance?

1—The most direct route to the filed alternate airport.
2—An off-airway route to the point of departure.
3—The route filed in the flight plan.
4—An "alternate airway" route to the destination.

6230. Which of the following groups contain altitudes or flight levels appropriate for a westbound IFR flight?

1—6,000, 8,000, FL280, FL310.
2—6,500, 8,500, FL285, FL315.
3—7,000, 9,000, FL290, FL330.
4—7,500, 9,500, FL295, FL315.

6231. What is the basic VFR visibility minimum in controlled airspace when flying more than 1,200 feet above the surface and less than 10,000 feet MSL?

1—5 nautical miles.
2—3 statute miles.
3—2 statute miles.
4—1 nautical mile.

6232. You are flying in IFR weather conditions and have two-way radio communications failure. What altitude should be used?

1—Last assigned altitude, altitude ATC has advised you to expect, or the MEA, whichever is highest.
2—An altitude that is at least 1,000 feet above the highest obstacle along the route.
3—Descend to 1,000 feet above the terrain and, if clear of clouds, proceed to the nearest appropriate airport; if not clear of clouds climb to an altitude of 1,000 feet above any obstacles on your route and fly to an area that has a ceiling of at least 1,000 feet.
4—A VFR altitude that is above the MEA for each leg.

6233. If the ADF navigation receiver malfunctions while operating in controlled airspace under IFR, the pilot in command must

1—advise ATC not to issue any clearance that requires ADF equipment.
2—continue as "cleared" and request an amended clearance only if the malfunction will cause deviations.
3—report the malfunction immediately to ATC.
4—continue flight as planned; if assigned ADF approach, request another approach explaining that your ADF is inoperative.

6234. Which equipment or instruments, in addition to those required for any Category II operation, must be installed if a Category II approach is made to a DH of 100 feet?

1—A ground proximity warning system that alerts the pilot when glide slope deviations occur.
2—A radio altimeter that provides a clear and positive display of main landing gear wheel height above the terrain.
3—A marker beacon receiver that provides either an aural or a visual indication of the inner marker.
4—A warning system that provides immediate pilot detection of pitot-static and gyroscopic system faults.

6235. Which visibility and cloud clearance is required for landing an airplane at an airport within a control zone under special VFR?

1—1 nautical mile ground visibility; 500-foot vertical and horizontal cloud clearance.
2—2 statute miles flight visibility; clear of clouds.
3—1 statute mile ground or flight visibility; clear of clouds.
4—2 nautical miles flight visibility; 500-foot vertical and horizontal cloud clearance.

6236. Which action is appropriate if more than one component of an ILS is inoperative?

1—Use the highest minimum required by any single component that is inoperative.
2—Request another approach appropriate to the equipment that is operative.
3—Raise the minima a total of that required by each component that is inoperative.
4—Raise the DH by 50 feet and landing minimum by 1/4 mile for each component that is inoperative.

6237. What is the maximum tolerance between the two omnibearing indicators of a dual VOR system when making a VOR equipment check while airborne?

1—4° between the indicated bearings to the station.
2—Plus or minus 6° directly over the checkpoint.
3—8° between the indicated bearings to the station.
4—Plus or minus 6° between the indicated bearings to the station.

6238. How should the pilot make a VOR receiver check when the airplane is located on the designated checkpoint on the airport surface?

1—With the aircraft headed directly toward the VOR and the TO/FROM indicator reading TO, set the OBS to 360°; the CDI should center within plus or minus 4° of that radial.
2—Set the OBS on the designated radial. The TO/FROM indicator should read FROM and the CDI must center within plus or minus 4° of that radial.
3—Set the OBS on 180° plus or minus 4°; the CDI should center with the TO/FROM indicator reading TO.
4—Set the OBS on the designated radial with the aircraft headed directly away from the VOR; the CDI should center within the TO/FROM indicator reading FROM.

6239. Which ground facility is not required for a Category II ILS instrument approach to a HAT of 150 feet or above?

1—Touchdown zone lighting.
2—Centerline lighting.
3—Inner marker.
4—RVR system for the touchdown zone.

6240. During an emergency, a pilot in command does not deviate from a FAR rule but is given priority by ATC. To whom or under what condition is the pilot required to submit a written report?

1—To the Chief of the General Aviation District Office.
2—To the chief of the facility in control at the time of the deviation.
3—Only if there was damage to the aircraft or injury to a passenger.
4—Upon request by ATC, submit a written report to the ATC chief.

6241. What is the maximum permissible variation between the two bearing indicators on a dual VOR system when checking one VOR against the other?

1—4° on the ground and in flight.
2—6° on the ground and in flight.
3—4° in flight and 6° on the ground.
4—6° in flight and 4° on the ground.

6242. What record shall be made by the pilot performing a VOR operational check?

1—The date, tach reading, frequency and bearing reading, and signature in the aircraft log.
2—The date, frequency of VOR or VOT, number of hours flown since last check, and signature in the aircraft log.
3—The date, place, bearing error, and signature in the aircraft log or other record.
4—The date, approval or disapproval, tach reading, and signature in the aircraft log or other permanent record.

6243. A pilot in command who declares an emergency on an instrument flight

1—may deviate from the rules but not from the clearance.
2—is exempt from all rules and clearances during the emergency.
3—may deviate from the rules to the extent necessary to meet the emergency.
4—may deviate from the clearance but not from the rules.

6244. A coded transponder equipped with altitude reporting equipment is required for all controlled airspace

1—except control zones.
2—above 12,500 feet MSL (excluding airspace at or below 2,500 feet AGL).
3—above 18,000 feet MSL (excluding airspace at or below 1,500 feet AGL).
4—below 14,500 feet MSL.

6245. Which of the following would be appropriate flight levels for an IFR flight from New York to Chicago?

1—FL300, FL320, FL340.
2—FL310, FL330, FL350.
3—FL280, FL300, FL320.
4—FL280, FL310, FL350.

6246. When takeoff minima are not prescribed for a civil airport, what are the takeoff minima under IFR for a three-engine airplane according FAR Part 91?

1—1 statute mile.
2—1/2 statute mile.
3—300 feet and 1/2 statute mile.
4—2,000 feet RVR.

6247. Where is DME required for instrument flight?

1—In positive control areas.
2—Above 18,000 feet MSL.
3—In terminal control areas.
4—Above 24,000 feet MSL when VOR navigational equipment is required.

6248. Which operational requirement must be observed by a commercial operator when ferrying a large, three-engine, turbojet-powered airplane from one facility to another to repair an inoperative engine?

1—The computed takeoff distance to reach V_1 must not exceed 70 percent of the effective runway length.
2—The existing and forecast weather for departure, en route, and approach must be VFR.
3—No passengers can be carried.
4—The weight at takeoff cannot exceed 65 percent of the maximum certificated takeoff weight.

6249. If ground visibility is not reported, what minimum in-flight visibility is required, under the provisions of special VFR, for takeoff from an airport located within a control zone?

1—5 statute miles.
2—3 statute miles.
3—1 nautical mile.
4—1 statute mile.

6250. When may ATC request a detailed report of an emergency even though a rule has not been violated?

1—When priority has been given.
2—Anytime an emergency occurs.
3—When the emergency occurs in controlled airspace.
4—Only when an accident results from the emergency.

6251. Which is the maximum tolerance for the VOR indication when the aircraft is directly over the designated airborne checkpoint?

1—Plus or minus 6° bearing error.
2—Plus or minus 4° bearing error.
3—Plus or minus 2.5° bearing error.
4—Plus or minus 5° bearing error.

6252. When must an operational check on the aircraft VOR equipment be accomplished to operate under IFR?

1—Every 60 days.
2—Every 10 days of operation and 10 hours of flight time.
3—Within the past 10 hours of flight and 10 days.
4—Within the preceding 30 days.

6253. What is the maximum tolerance allowed for an operational check of the aircraft VOR equipment when using a VOT?

1—Plus or minus 4°.
2—Plus or minus 2°.
3—Plus or minus 6° if one receiver is checked against the other.
4—Plus or minus 6° while airborne.

6254. When dual independent VOR receivers are installed in an aircraft, what is an acceptable indication of the bearing indicators when checking the receivers using a VOT?

1—VOR No. 1 – 001° – FROM; VOR No. 2 – 184° – FROM.
2—VOR No. 1 –180° – FROM; VOR No. 2 – 184° – FROM.
3—VOR No. 1 – 360° – TO; VOR No. 2 – 002° – TO.
4—VOR No. 1 – 180° – TO; VOR No. 2 – 183° – TO.

6255. In addition to the basic equipment required for Category II operations, what additional equipment is required for a Category II HAT below 150 feet?

1—Dual localizer and glide slope receiving antenna, and DME.
2—A radio altimeter that displays the actual height of the flight deck above the terrain.
3—A third gyroscopic pitch–and–bank indicator system.
4—A marker beacon that provides both aural and visual indications of the inner marker or a radio altimeter.

6256. If an emergency requiring immediate action causes you to deviate from a rule in FAR Part 91, what is your responsibility as pilot in command?

1—A written report of the deviation shall be submitted only if requested by the Administrator.
2—A written report shall be made immediately to the nearest FAA District Office upon landing at your destination.
3—No report is necessary unless priority handling by ATC was required.
4—A written report of the deviation must be submitted within 7 calendar days to the Administrator.

6257. Which entry shall be recorded by the person performing a VOR operational check?

1—Tachometer reading, approval or disapproval of the VOR receiver, and the frequency used.
2—Frequency, radial and facility used, and bearing error.
3—Flight hours and number of days since last check, and bearing error.
4—Date, place, bearing error, and signature.

6258. The landing minimum for a particular instrument approach procedure is RVR 40. What minimum ground visibility may be substituted for the RVR value?

1—3/8 statute mile.
2—5/8 statute mile.
3—3/4 statute mile.
4—7/8 statute mile.

6259. Which of the following groups contain altitudes or flight levels appropriate for an eastbound IFR flight?

1—7,000, 9,000, FL290, FL330.
2—7,500, 9,500, FL295, FL315.
3—6,000, 8,000, FL280, FL310.
4—6,500, 8,500, FL285, FL315.

6260. In what altitude structure is a transponder required when operating in controlled airspace?

1—Above 12,500 feet AGL, excluding the airspace at and below 2,500 feet AGL.
2—Above 12,500 feet MSL, excluding the airspace at and below 2,500 feet AGL.
3—Above 14,500 feet MSL, excluding the airspace at and below 2,500 feet AGL.
4—Above 14,500 feet MSL, excluding the airspace at and below 1,500 feet AGL.

6261. Which of the following would be appropriate flight levels for an IFR flight from Los Angeles to Chicago?

1—FL280, FL300, FL320.
2—FL300, FL320, FL340.
3—FL280, FL310, FL350.
4—FL290, FL330, FL370.

6262. What action should you take if the DME fails at FL350?

1—Continue to the destination and have the DME repaired before takeoff.
2—Continue the flight as planned, since a DME is not required.
3—Notify ATC that it will be necessary to go to a lower altitude, since your DME has failed.
4—Notify ATC that the DME has failed and continue the flight to next airport of intended landing.

6263. When proceeding to the alternate airport, which minima apply?

1—The IFR alternate minimums section in the front of the NOAA IAP book.
2—Ceiling at or above the MEA, MOCA, or MSA, whichever is greater.
3—2000–3 for at least 1 hour before until 1 hour after the ETA.
4—The actual minimums shown on the IAP chart for the airport.

6264. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD EAST ON THE ZERO NINER ZERO RADIAL, LEFT TURNS, MAINTAIN SEVEN THOUSAND, EXPECT FURTHER CLEARANCE AT ZERO FIVE TWO ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 10.

1—Parallel or teardrop.
2—Parallel only.
3—Direct only.
4—Teardrop only.

6265. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD SOUTH ON THE ONE EIGHT ZERO RADIAL, 5-MILE LEGS, MAINTAIN NINER THOUSAND, EXPECT FURTHER CLEARANCE AT ONE FIVE TWO FIVE."

Determine the proper holding pattern entry using the HSI shown in Figure 10.

1—Teardrop only.
2—Direct only.
3—Parallel only.
4—Parallel or teardrop.

6266. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD NORTH ON THE THREE SIX ZERO RADIAL, LEFT TURNS, MAINTAIN FOUR THOUSAND, EXPECT FURTHER CLEARANCE AT ZERO FIVE TWO ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 10.

1—Parallel or teardrop.
2—Parallel only.
3—Direct only.
4—Teardrop only.

6267. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD WEST ON THE TWO SEVEN ZERO RADIAL, MAINTAIN ONE TWO THOUSAND, EXPECT FURTHER CLEARANCE AT ONE FIVE TWO ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 10.

1—Parallel only.
2—Teardrop or direct.
3—Direct only.
4—Teardrop only.

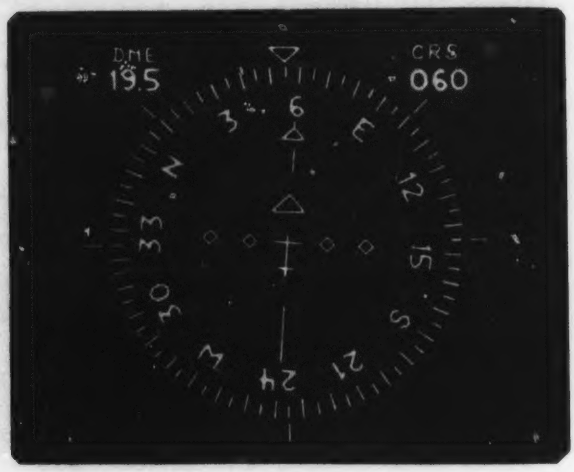


Figure 10

6268. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD WEST ON THE TWO SEVEN ZERO RADIAL, MAINTAIN SIX THOUSAND, EXPECT FURTHER CLEARANCE AT ONE THREE TWO FIVE."

Determine the proper holding pattern entry using the HSI shown in Figure 11.

1—Teardrop only.
2—Parallel only.
3—Direct only.
4—Direct or parallel.

6269. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD EAST ON THE ZERO NINER ZERO RADIAL, LEFT TURNS, MAINTAIN NINER THOUSAND, EXPECT FURTHER CLEARANCE AT ONE FIVE FOUR ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 11.

1—Teardrop only.
2—Parallel only.
3—Direct only.
4—Direct or parallel.

6270. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD SOUTH ON THE ONE EIGHT ZERO RADIAL, 5-MILE LEGS, MAINTAIN FIVE THOUSAND, EXPECT FURTHER CLEARANCE AT ONE FIVE TWO ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 11.

1—Parallel only.
2—Teardrop or direct.
3—Direct only.
4—Teardrop only.

6271. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD NORTH ON THE THREE SIX ZERO RADIAL, LEFT TURNS, MAINTAIN ONE TWO THOUSAND, EXPECT FURTHER CLEARANCE AT ONE SIX ZERO FIVE."

Determine the proper holding pattern entry using the HSI shown in Figure 11.

1—Direct only.
2—Teardrop only.
3—Teardrop or parallel.
4—Parallel only.

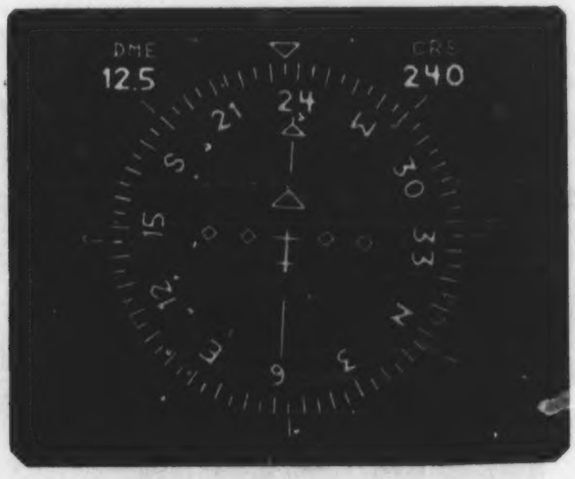


Figure 11

6272. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD WEST ON THE TWO SEVEN ZERO RADIAL, 5-MILE LEGS, MAINTAIN NINER THOUSAND, EXPECT FURTHER CLEARANCE AT ZERO FIVE TWO ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 12.

1—Parallel or teardrop.
2—Parallel only.
3—Direct only.
4—Teardrop only.

6273. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD SOUTHEAST ON THE ONE TWO ZERO RADIAL, LEFT TURNS, MAINTAIN ONE ZERO THOUSAND, EXPECT FURTHER CLEARANCE AT ONE TWO TWO ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 12.

1—Parallel only.
2—Teardrop or direct.
3—Teardrop only.
4—Direct only.

6274. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD SOUTH ON THE ONE EIGHT ZERO RADIAL, MAINTAIN EIGHT THOUSAND, EXPECT FURTHER CLEARANCE AT ONE FIVE THREE ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 12.

1—Direct only.
2—Teardrop only.
3—Teardrop or parallel.
4—Parallel only.

6275. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD NORTH ON THE THREE SIX ZERO RADIAL, LEFT TURNS, MAINTAIN NINER THOUSAND, EXPECT FURTHER CLEARANCE AT ONE NINER FOUR ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 12.

1—Teardrop only.
2—Direct only.
3—Parallel only.
4—Parallel or teardrop.

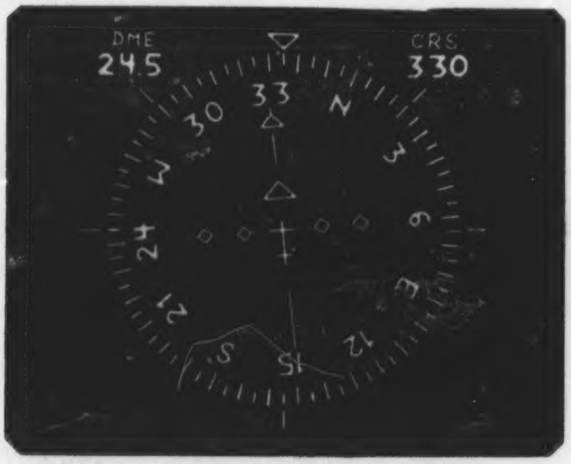


Figure 12

6276. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD WEST ON THE TWO SEVEN ZERO RADIAL, 5-MILE LEGS, MAINTAIN ONE TWO THOUSAND, EXPECT FURTHER CLEARANCE AT ONE ZERO THREE FIVE."

Determine the proper holding pattern entry using the HSI shown in Figure 13.

1—Teardrop only.
2—Parallel or teardrop.
3—Parallel only.
4—Direct only.

6277. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD SOUTH ON THE ONE EIGHT ZERO RADIAL, 5-MILE LEGS, MAINTAIN ONE NINER THOUSAND, EXPECT FURTHER CLEARANCE AT ONE THREE TWO ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 13.

1—Teardrop only.
2—Parallel only.
3—Direct only.
4—Direct or Parallel.

6278. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD SOUTHEAST ON THE ONE TWO ZERO RADIAL, LEFT TURNS, MAINTAIN ONE FIVE THOUSAND, EXPECT FURTHER CLEARANCE AT ONE EIGHT ONE ZERO."

Determine the proper holding pattern entry using the HSI shown in Figure 13.

1—Direct only.
2—Teardrop only.
3—Teardrop or parallel.
4—Parallel only.

6279. A pilot receives the following ATC transmission while inbound to XYZ VORTAC:

"PALMTREE THREE TWO SIX IS CLEARED TO XYZ VORTAC, HOLD NORTH ON THE THREE SIX ZERO RADIAL, 5-MILE LEGS, LEFT TURNS, MAINTAIN FIVE THOUSAND, EXPECT FURTHER CLEARANCE AT ONE NINER TWO FIVE."

Determine the proper holding pattern entry using the HSI shown in Figure 13.

1—Teardrop only.
2—Parallel only.
3—Direct or parallel.
4—Direct.

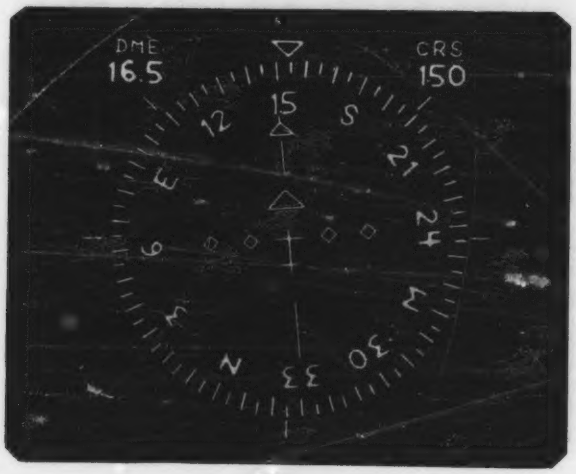


Figure 13

6280. The prescribed landing minimum of RVR 32 for the runway of intended operation is not reported. What minimum ground visibility may be used instead of the RVR value?

1—1/2 statute mile.
2—3/8 statute mile.
3—5/8 statute mile.
4—3/4 statute mile.

6281. What minimum ground visibility may be used instead of a prescribed landing minimum of RVR 16 when that RVR value is not reported?

1—1/4 statute mile.
2—3/4 statute mile.
3—5/8 statute mile.
4—3/8 statute mile.

6282. In an emergency requiring immediate action, the pilot in command may deviate from a rule of FAR Part 91 to the extent

1—authorized by the air carrier's operations specifications.
2—necessary to conform to ATC instructions.
3—necessary, except flight contrary to an ATC clearance.
4—necessary to meet that emergency.

6283. Which checks and inspections of flight instruments or instrument systems must be accomplished before an airplane can be flown under IFR?

1—VOR within 30 days, altimeter systems within 24 calendar months, and transponder within 24 calendar months.
2—ELT test within 30 days, altimeter systems within 12 calendar months, and transponder within 24 calendar months.
3—VOR within 24 calendar months, transponder within 24 calendar months, and altimeter system within 12 calendar months.
4—Airspeed indicator within 24 calendar months, altimeter system within 24 calendar months, and transponder within 12 calendar months.

6284. In addition to a VOR receiver and two-way communications capability, which additional equipment is required for IFR operation in a Group I terminal control area?

1—Another VOR and communications receiver and a coded transponder.
2—Standby VOR and communications receiver and DME.
3—Standby communications receiver, DME, and coded transponder.
4—An operable coded transponder having Mode C capability.

6285. An airplane altimeter system test and inspection must be accomplished within

1—12 calendar months.
2—18 calendar months.
3—24 calendar months.
4—48 calendar months.

6286. In which airspace are "VFR On Top" operations prohibited?

1—Military Operations Area.
2—Between 18,000 feet and FL600.
3—During off-airway direct flights.
4—Group I TCA's.

6287. Assuming that all ILS components are operating and the required visual references are not established, the missed approach should be initiated upon

1—arrival at the DH on the glide slope.
2—arrival at the visual descent point.
3—arrival at the middle marker.
4—expiration of the time listed on the approach chart for missed approach.

6288. Under which condition may a pilot descend below DH or MDA when using the ALSF-1 approach light system as the necessary visual reference for the intended runway?

1—Only if the threshold lights or markings can be clearly seen, in addition to the approach light system.
2—Under no condition can the approach light system serve as a necessary visual reference for descent below DH or MDA.
3—Descent to the intended runway is authorized as long as any portion of the approach light system can be seen.
4—The approach light system can be used as a visual reference, except that descent below 100 feet above TDZE requires that the red light bars be visible and identifiable.

6289. What altitudes are you authorized to fly when ATC clears you for an ILS approach?

1—You may begin a descent to the procedure turn altitude.
2—Maintain your last assigned altitude until established on a published route or segment of the approach with published altitudes.
3—You may immediately descend to the glide slope interception altitude.
4—You may descend from your assigned altitude only when you are established on the final approach course.

6290. How is your IFR flight plan closed when your destination airport has IFR conditions and there is no control tower or FSS on the field?

1—The ARTCC controller will close your flight plan upon clearing you for the approach.
2—The ARTCC controller will close your flight plan when you report the runway in sight.
3—You may close your flight plan any time after starting the approach by contacting any FSS or ATC facility.
4—Upon landing, you must close your flight plan by radio or by telephone to any FSS or ATC facility.

6291. Who is responsible for determining that the altimeter system has been checked and found to meet FAR requirements for a particular instrument flight?

1—Owner.
2—Operator.
3—A certificated mechanic.
4—Pilot in command.

6292. When are you required to establish communications with the tower, if you cancel your IFR flight plan 10 miles from the destination?

1—Immediately after canceling the flight plan.
2—When advised by ARTCC.
3—At least 5 miles from the center of the airport.
4—Immediately prior to entering the traffic pattern.

6293. What term is used to identify the altitude which is in effect between radio fixes on a VOR airway that assures acceptable navigational signal coverage only within 25 statute miles of a VOR/VORTAC station?

1—MEA (Minimum En Route Altitude).
2—MRA (Minimum Reception Altitude).
3—MOCA (Minimum Obstruction Clearance Altitude).
4—MCA (Minimum Crossing Altitude).

6294. What aural and visual indications should be received when over the back course marker on a published back course ILS?

1—Continuous dots — blue light.
2—Two dot combinations — amber light.
3—Continuous dots — white light.
4—Two dot combinations — white light.

6295. When are ATIS broadcasts updated?

1—Every 30 minutes if weather conditions are below basic VFR; otherwise, hourly.
2—Hourly, regardless of weather conditions.
3—Whenever the ceiling varies more than 100 feet and/or visibility is more than 1 mile, or wind conditions dictate a change of primary runway(s) in use.
4—Upon receipt of any official weather, regardless of content change and reported values.

6296. A NOTAM disseminated only locally by Flight Service Stations is categorized as a

1—NOTAM (L).
2—NOTAM (D).
3—FDC NOTAM.
4—NOTAM advisory (AIRAD).

6297. When may a pilot file a composite flight plan?

1—Only if the first segment of the flight is IFR.
2—When either the first or last segment is VFR.
3—Only if the flight begins and ends in controlled airspace.
4—Anytime a landing is planned at an intermediate airport.

6298. For which airspeed variation should you notif ATC?

1—When the groundspeed changes more than 5 knots, o 3 percent, whichever is greater.
2—When the true airspeed changes more than 5 knots.
3—When the flight planned true airspeed is expected t vary by plus or minus 10 knots, or 5 percent whichever is greater.
4—Any time the indicated airspeed changes more tha 10 knots.

6299. What operational consideration normally applies t a SID clearance?

1—A SID clearance will not be issued to an air taxi IF flight unless the pilot in command specificall requests it.
2—The pilot in command of an air taxi airplane ma either accept or decline a SID clearance.
3—An air taxi pilot must accept a SID clearance issued b ATC.
4—ATC will not issue a SID clearance to any aircraft departing VFR on an IFR flight plan.

6300. If your flight encounters weather conditions which have not been forecast, what action are you expected to take?

1—Advise the nearest FSS on the emergency frequency.
2—Request the latest or revised weather conditions via company radio.
3—Make a complete report to weather office on arrival at destination.
4—Report existing weather conditions to ATC.

6301. Approaching your destination on an IFR flight plan, you are cleared for a "Visual Approach". This means that

1—your IFR flight plan has been canceled and you may proceed VFR.
2—as soon as you sight the field, you are cleared to land.
3—you are within 1 statute mile and can make the approach by visual reference to the surface.
4—you may deviate from the prescribed instrument approach procedures and proceed to the airport visually.

6302. What is meant when ATC uses the phrase "Cleared for Approach"?

1—You may use any published approach procedure for the airport or, if clear of clouds, execute a contact approach.
2—You are expected to execute the published approach to the active runway or, if clear of clouds with at least 1 mile visibility, execute a visual approach.
3—You must execute the published approach to the active runway or must advise the tower that you will execute another approach and circle to land on the active runway.
4—You may execute any published approach for the airport as long as you execute the entire procedure as prescribed.

6303. The recommended maximum indicated airspeed to use when holding at 10,000 feet MSL in a civil turbojet airplane is

1—230 knots.
2—210 knots.
3—200 knots.
4—175 knots.

6304. What is the recommended procedure for transitioning from VFR to IFR on a composite flight plan?

1—Prior to transition to IFR, contact the nearest FSS, close the VFR portion, and request ATC clearance.
2—Upon reaching the proposed point for change to IFR, contact the nearest FSS and cancel your VFR flight plan, then contact ARTCC and request an IFR clearance.
3—Upon reaching the proposed point for change to IFR, contact ARTCC, request your IFR clearance, and instruct them to cancel the VFR flight plan.
4—Upon reaching the proposed point for change to IFR, contact ARTCC, give a position report, and request your IFR clearance.

6305. When planning a direct flight at FL350, the distance between VORTAC's should not be more than

1—100 nautical miles apart.
2—130 nautical miles apart.
3—200 nautical miles apart.
4—260 nautical miles apart.

6306. What timing procedure should be used when performing a VOR holding pattern at 8,000 feet?

1—Timing for the outbound leg begins over or abeam the fix, whichever occurs later.
2—The initial outbound leg should be flown for 1-1/2 minutes.
3—Timing for the inbound leg begins when over the VOR.
4—Adjustments in timing of each pattern should be made on the inbound leg.

6307. What maximum indicated Mach or KIAS does ATC expect you to maintain to ensure proper airspace protection when holding in turbulent air conditions?

1—Mach .80 or 280 KIAS, whichever is lower.
2—Mach .78 or 270 KIAS, whichever is lower.
3—Mach .80 or 280 KIAS, whichever is higher.
4—Mach .78 or 270 KIAS, whichever is higher.

6308. When holding at an NDB, at what point should the timing begin for the second leg outbound?

1—When the wings are level and the wind drift correction angle established after completing the turn to the outbound heading.
2—When the wings are level after completing the turn to the outbound heading, or abeam the fix, whichever occurs first.
3—When abeam the holding fix.
4—At the end of a 1-minute standard rate turn after station passage.

6309. At what point should the timing begin for the first leg outbound in a nonstandard holding pattern?

1—When over abeam the holding fix.
2—Abeam the holding fix, or level attitude, whichever occurs last.
3—When the TO/FROM indicator reverses.
4—When the minimum DME value is observed.

6310. What is meant when ATC advises you to "resume own navigation" after you have been on a radar vector?

1—You should resume your own navigational responsibility by use of your own navigation equipment.
2—Radar service is terminated.
3—Advisories will no longer be issued by ATC.
4—You are still in radar contact, but must make position reports.

6311. What service should you normally expect from an En Route Flight Advisory Service Station?

1—Weather advisories pertinent to the type flight, intended route of flight, and altitude.
2—Preferential routing and radar vectoring to circumnavigate severe weather.
3—Severe weather information, changes in flight plans, and receipt of position reports.
4—Radar vectors for traffic avoidance, route weather advisories, and altimeter settings.

6312. What are the requirements for a contact approach to an airport that has an approved instrument approach procedure, if the pilot is on an instrument flight plan and clear of clouds?

1—The controller must determine that the pilot can see the airport at the altitude flown and can remain clear of clouds.
2—The controller must be reasonably sure the pilot can remain clear of clouds and must give the pilot an alternative in case the visibility decreases or the ceiling lowers.
3—The pilot must agree to the approach when given by ATC and the controller must have determined that the visibility was at least 1 mile and be reasonably sure the pilot can remain clear of clouds.
4—The pilot must request the approach, have at least 1 mile visibility, and be reasonably sure of remaining clear of clouds.

6313. If included in the operations specifications, what is a necessary condition for ATC to approve an IFR random RNAV route?

1—The aircraft must be equipped with dual RNAV receivers.
2—The RNAV waypoints must be established fixes.
3—The pilot must file the flight plan at least 1 hour prior to expected departure time.
4—The route must be in radar environment.

6314. What time sequence does ATC recommend for filing an IFR flight plan and requesting the clearance at airports having pre-taxi clearance procedures, in order to minimize departure delays?

1—File within 20 minutes of proposed departure time and request the clearance not more than 10 minutes prior to taxi.
2—File within 1 hour of proposed departure time and request the clearance at least 10 minutes prior to taxi.
3—File at least 30 minutes prior to the proposed departure time and request the clearance not more than 10 minutes prior to taxi.
4—File at least 30 minutes prior to proposed departure time and request the clearance at least 10 minutes prior to taxi.

6315. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position C, Figure 16, page 37, and is below the ILS glide slope?

1—E.
2—G.
3—I.
4—J.

6316. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position E, Figure 16, page 37, and is above the ILS glide slope?

1—A.
2—C.
3—E.
4—J.

6317. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position C, Figure 16, page 37, and is on the ILS glide slope?

1—A.
2—B.
3—E.
4—G.

6318. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position E, Figure 16, page 37, and is on the ILS glide slope?

1—A.
2—B.
3—F.
4—I.

6319. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position F (the missed approach point), Figure 16, page 37, and has just initiated a missed approach?

1—C.
2—F.
3—H.
4—J.

6320. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position D, Figure 16, page 37, and is above the ILS glide slope?

1—D.
2—E.
3—F.
4—H.

6321. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position D, Figure 16, page 37, and is on the ILS glide slope?

1—B.
2—D.
3—F.
4—H.

6322. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position C, Figure 16, page 37, and is above the ILS glide slope?

1—C.
2—E.
3—G.
4—J.

6323. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position B, Figure 16, page 37, and has been cleared for the approach?

1—A.
2—C.
3—I.
4—J.

6324. Which attitude indicator/HSI combination from Figure 14 or Figure 15, page 35 or 36, correctly depicts the instrument indications for an airplane that is in position A, Figure 16, page 37, and has been cleared for the approach?

1—B.
2—C.
3—G.
4—I.

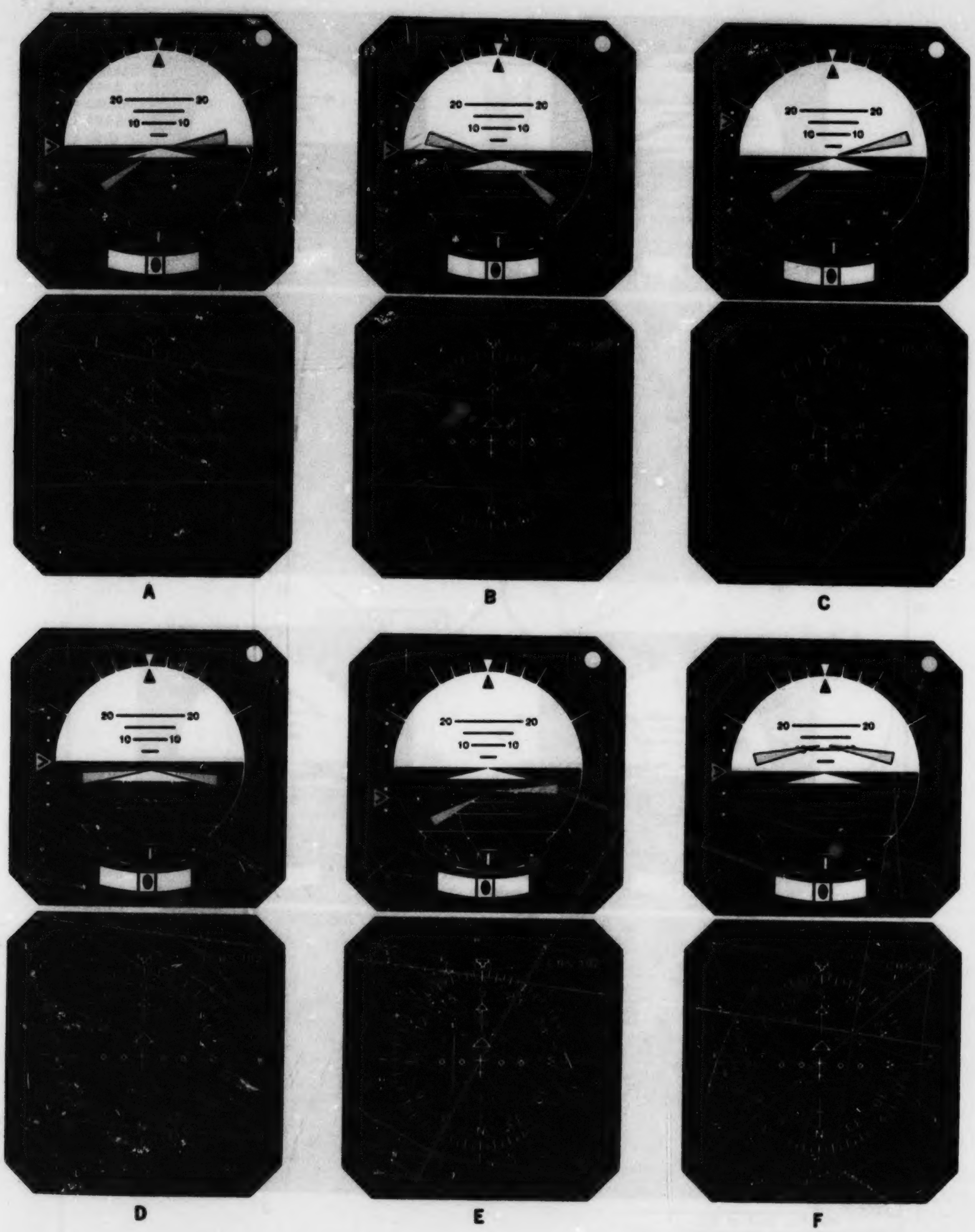
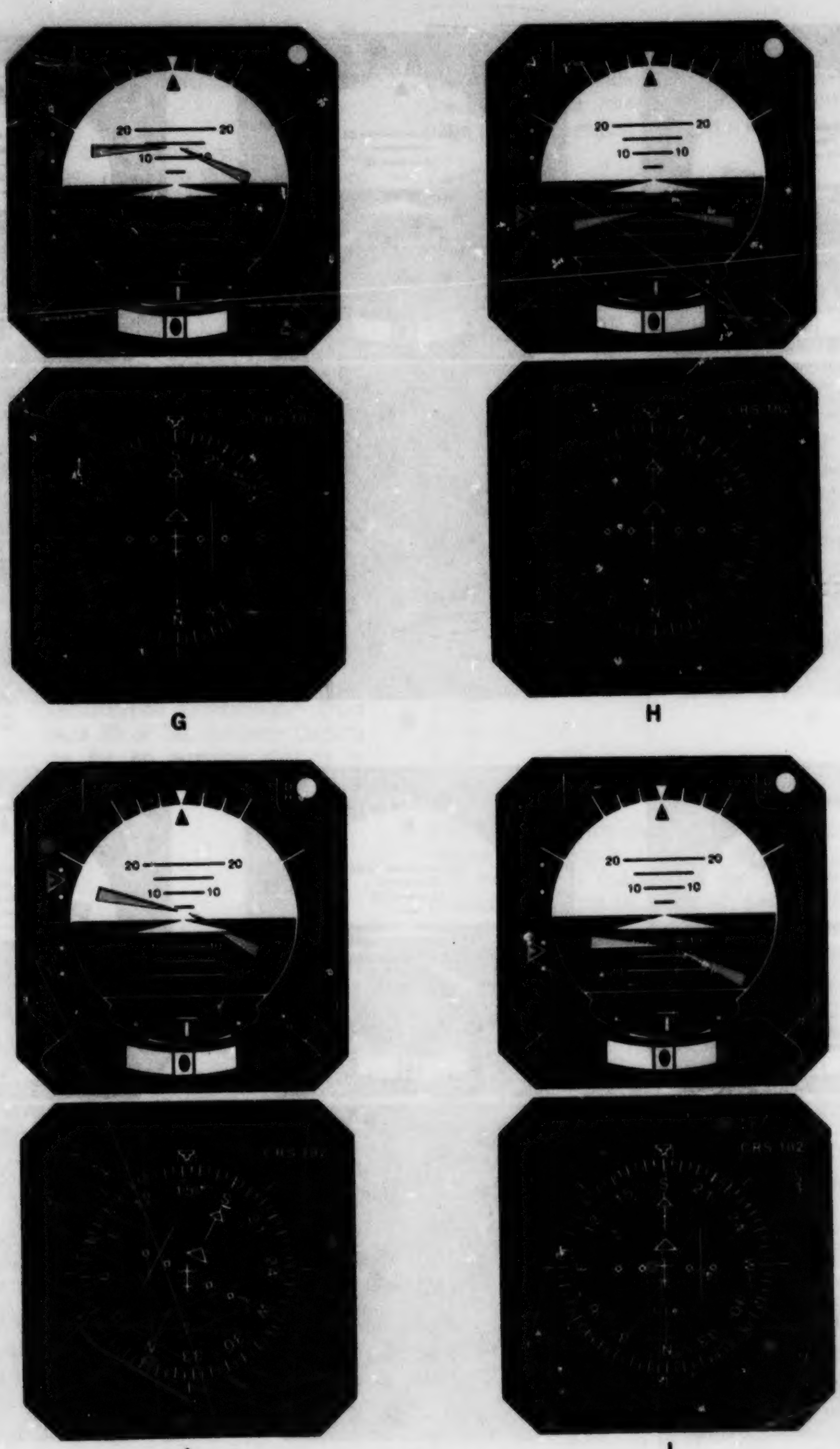

20
20
10
10
A
B
C
D
E
F

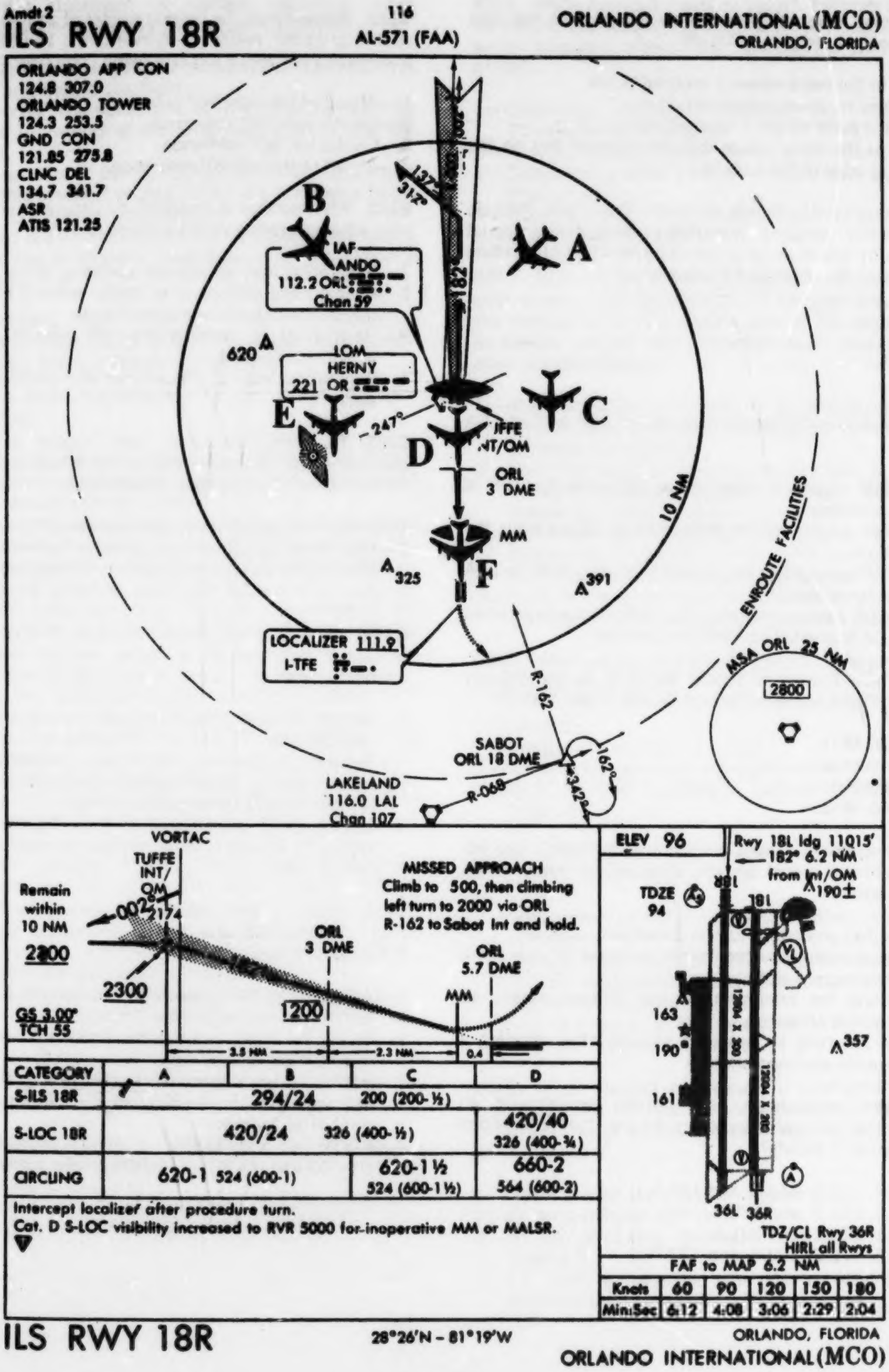
Figure 14


20
20
10
10
CRS 102

G H

I J

Figure 15



Amdt 2

ILS RWY 18R

116

AL-571 (FAA)

ORLANDO INTERNATIONAL (MCO)

ORLANDO, FLORIDA

ORLANDO APP CON
124.8 307.0
ORLANDO TOWER
124.3 253.5
GND CON
121.85 275.8
CLNC DEL
134.7 341.7
ASR
ATIS 121.25

MISSED APPROACH
Climb to 500, then climbing left turn to 2000 via ORL R-162 to Sabot Int and hold.

CATEGORY	A	B	C	D
S-ILS 18R	294/24 200 (200-½)			
S-LOC 18R	420/24 326 (400-½)			420/40 326 (400-¾)
CIRCLING	620-1 524 (600-1)		620-1½ 524 (600-1½)	660-2 564 (600-2)

Intercept localizer after procedure turn.
Cat. D S-LOC visibility increased to RVR 5000 for inoperative MM or MALSR.

ELEV 96

TDZE 94

Rwy 18L ldg 11015'

TDZ/CL Rwy 36R
HIRL all Rwys

FAF to MAP 6.2 NM

Knots	60	90	120	150	180
Min:Sec	6:12	4:08	3:06	2:29	2:04

ILS RWY 18R

28°26'N - 81°19'W

ORLANDO, FLORIDA

ORLANDO INTERNATIONAL (MCO)

B
A
C
D
E
F
IAF
ANDO
112.2 ORL
Chan 59
620
LOM
HERNY
221 OR
247°
TUFFE
INT/OM
ORL
3 DME
MM
325
391
10 NM
ENROUTE FACILITIES
LOCALIZER 111.9
I-TFE
R-162
SABOT
ORL 18 DME
162°
342°
R-068
LAKELAND
116.0 LAL
Chan 107
MSA ORL 25 NM
2800
137°
312°
002°
182°
VORTAC
TUFFE
INT/
OM
Remain within 10 NM
2800
2174
2300
GS 3.00°
TCH 55
1200
ORL
3 DME
ORL
5.7 DME
MM
3.5 NM
2.3 NM
0.4
182° 6.2 NM
from Int/OM
190±
18R
18L
163
190°
161
357
12004 X 300
12004 X 200
36L
36R

Figure 16

6325. If you take off behind a heavy jet that has just landed, you should plan to lift off

1—prior to the point where it touched down.
2—at the point where it touched down.
3—past the point where it touched down.
4—prior to the point where it touched down and on the upwind edge of the runway.

6326. The altitude, shown on an En Route Low Altitude Chart, which ensures acceptable navigational signal reception by which an accurate determination of position can be made at a specified intersection is a

1—MRA.
2—MCA.
3—MOCA.
4—MEA.

6327. What is a difference between an SDF and an LDA facility?

1—The SDF course is either 6° or 12° while the LDA is approximately 5°.
2—The SDF course has no glide slope guidance while the LDA does.
3—The SDF course has no marker beacons while the LDA has at least an OM.
4—The SDF course transmits on VHF frequencies while the LDA transmits on UHF frequencies.

6328. Which frequency should be used to contact any En Route Flight Advisory Service facility (Flight Watch)?

1—122.00 MHz.
2—122.70 MHz.
3—123.00 MHz.
4—123.05 MHz.

6329. In addition to those pilot reports normally required, what additional report are you expected to make to ATC without request?

1—Time that procedure turn is completed.
2—When vacating any previously assigned altitude for a newly assigned altitude.
3—Reaching the minimum descent altitude during an instrument approach.
4—When reaching an assigned altitude after vacating a previously assigned altitude.

6330. What frequencies are normally available at all FSS's unless otherwise indicated by the communications box for an ATC facility?

1—255.4, 122.2, 243.0, and 121.5.
2—122.2, 121.5, and 122.0.
3—122.1, 122.2, and 121.5.
4—121.5, 122.2, 122.6, and 122.0.

6331. Where should the bearing pointer of an RMI be located relative to the 90° reference to maintain a 16 DME range in a left–hand arc with a left crosswind component?

1—Ahead of the right 90° reference.
2—On the right 90° reference.
3—On the left 90° reference.
4—Ahead of the left 90° reference.

6332. What service is provided by approach control to a pilot when operating within a Stage III TRSA?

1—Separation from all aircraft operating within the TRSA.
2—Position and altitude of all traffic within 2 miles of the IFR pilot's line of flight and altitude.
3—Position of all participating VFR aircraft within the airport traffic area.
4—Separation from all IFR aircraft and participating VFR aircraft.

6333. To what tolerances, with regard to proposed courseline and estimated time of penetration, should you adhere when penetrating a coastal ADIZ?

1—Plus or minus 10 miles; plus or minus 10 minutes.
2—Plus or minus 20 miles; plus or minus 5 minutes.
3—Plus or minus 10 miles; plus or minus 5 minutes.
4—Plus or minus 20 miles; plus or minus 3 minutes.

6334. What report(s) should be made to ATC when you receive a clearance to a higher altitude and you are unable to climb at a rate of at least 500 ft./min.?

1—Report vacating present altitude and report arriving at new altitude.
2—Report only when you vacate your present altitude.
3—Report leaving present altitude and advise ATC when unable to climb at least 500 ft./min.
4—Initiate climb promptly upon receiving clearance and report to ATC only when unable to maintain at least 500 ft./min.

6335. What in–flight weather advisories are provided by Flight Service Stations having broadcast capability on VOR's and NDB's?

1—AIRMET's at 30 minute intervals (H+15 and H +45) during the first hour after issuance.
2—SIGMET's at 30 minute intervals (H+00 and H +30) during their valid period.
3—AIRMET's and non–convective SIGMET's at 15 minute intervals (H+15, H+30, and H+45) during the first hour after issuance.
4—AIRMET's and SIGMET's at 30 minute intervals (H+00 and H+30) during their valid period.

6336. Which statement is correct regarding wake turbulence produced by a large transport airplane?

1—Vortices can be avoided by remaining at least 300 feet below and behind the flight.
2—The vortex characteristics of any airplane may be altered by extending the wing flaps or changing the speed.
3—Wake turbulence behind a propeller-driven airplane is negligible since jet engine thrust is a necessary factor in the formation of vortices.
4—Induced roll within vortices will not exceed the rolling capabilities of modern, short span, high-performance airplanes.

6337. CENTRAL TWO TWENTY FIVE, CENTERFIELD WIND ZERO TWO ZERO ONE FIVE, WEST BOUNDARY WIND THREE FOUR ZERO AT THREE FIVE

The above radio transmission by the tower controller indicates that

1—a pilot west of the airport reported winds at 35 knots.
2—an apparent discrepancy in wind velocities exists and pilots should exercise caution.
3—wake turbulence exists to the west side of the active runway and the departing aircraft should use caution.
4—there is a probable wind shear hazard at the airport.

6338. What action should you take if you receive an IFR clearance with a "void time" but are unable to depart by that time?

1—None, the clearance is automatically dropped after 1 hour.
2—Monitor the assigned frequency for a revision of the "void time."
3—Request a revised "void time" on 121.5.
4—Advise ATC of intentions as soon as possible, but no later than 30 minutes after "void time."

6339. What position reports should be made without request on an ILS approach when not in "Radar Contact"?

1—LOM inbound, and missed approach.
2—LOM inbound and runway in sight.
3—LOM outbound, LOM inbound, and runway in sight.
4—LOM outbound, procedure turn inbound, and MM.

6340. When filing a composite flight plan where the first portion of the flight is IFR, which fix(es) should be indicated on the flight plan?

1—All reporting points along the IFR route.
2—The fix where you plan to terminate the IFR portion of the flight.
3—All compulsory reporting points on the IFR segment.
4—The VOR's that determine the route of flight.

6341. When a pilot is ready to depart IFR from an airport where pre-taxi clearance procedures are established, on which frequency should the first contact be made and when?

1—Clearance delivery frequency not more than 10 minutes prior to taxi.
2—Ground control frequency when ready to taxi.
3—Clearance delivery frequency more than 10 minutes prior to taxi.
4—Clearance delivery frequency at least 30 minutes prior to expected takeoff time.

6342. Upon reaching the MDA with the runway in sight, a pilot starts a circling approach. If the pilot loses sight of the runway or an identifiable part of the airport, which procedure should be followed? (ATC has given no alternate procedure.)

1—Maintain MDA, turn towards landing runway and if runway is in sight, land; if not, follow printed missed approach instructions.
2—Make 90° turn in the opposite direction. If runway is in sight, continue approach; if not, proceed with missed approach procedure.
3—Make an initial climbing turn towards the landing runway and continue the turn until in a safe position to intercept the missed approach course.
4—Turn in the direction of the missed approach course and follow the printed missed approach procedure.

6343. When may a pilot cancel the IFR flight plan prior to completing the flight?

1—Anytime.
2—Anytime an emergency occurs.
3—Anytime a clearance may cause a deviation from FAR.
4—Only in VFR conditions outside positive control airspace.

6344. Which procedure applies to SID's (Standard Instrument Departures)?

1—SID clearances will not be issued unless requested by the pilot.
2—The pilot must accept a SID when issued by ATC.
3—If a SID is accepted, the pilot must possess at least a textual description.
4—ATC will issue a SID whenever it is necessary to amend a departure clearance.

6345. When cleared to execute a published side-step maneuver for a specific approach and subsequent landing, at what point is the pilot expected to commence this maneuver?

1—At the DH for the straight-in approach.
2—At the published ASR minima.
3—At the published minimum altitude for a circling approach.
4—As soon as possible after the runway or runway environment is in sight.

6346. When are you required to utilize the Category II holding lines on airport taxiways?

1—When you are operating a Category II equipped airplane.
2—When weather conditions are below Category I landing approach minima.
3—At all times on an airport that is approved for Category II operations.
4—Anytime Category II operations are in progress at that airport.

6347. When is radar service terminated during a "visual approach"?

1—Automatically when ATC instructs the pilot to contact the tower.
2—Immediately upon acceptance of the approach by the pilot.
3—When ATC advises, "Radar service terminated; resume own navigation."
4—When the pilot is on final approach for a landing.

6348. After experiencing two-way radio communications failure en route, when should you begin your descent for the instrument approach?

1—Upon arrival at any initial approach fix for the instrument approach procedure but not before your flight plan ETA as amended by ATC.
2—At the fix from which the approach begins as close as possible to the EFC time.
3—Upon arrival of the holding fix depicted on the instrument approach procedure at your corrected ETA, plus or minus 3 minutes.
4—At the primary initial approach fix for the instrument approach procedure at the ETA shown on your flight plan or the EFC time, whichever is later.

6349. What conditions are necessary before ATC can clear you for a visual approach?

1—You must remain clear of clouds, surface visibility 1 mile, and ceiling at least 1,000 feet.
2—You must have the preceding aircraft in sight, and be able to remain in VFR conditions.
3—You must have the airport or the preceding aircraft in sight, and be able to proceed to, and land in VFR conditions.
4—You must have the airport in sight and be able to proceed to the airport in VFR conditions.

6350. ATC should be advised any time a pilot is unable to climb or descend at a rate of at least

1—200 ft./min.
2—250 ft./min.
3—500 ft./min.
4—1,000 ft./min.

6351. If you do not file for a specific SID (standard instrument departure) on your flight plan, ATC

1—will not assign a SID as part of your clearance.
2—will not assign a SID unless you request it when you call for your clearance.
3—may assign a SID if they deem it appropriate.
4—will ask if you will accept a SID before assigning one as part of your clearance.

6352. What is the difference between an LDA (localizer type directional aid) and the ILS localizer?

1—The LDA is not aligned with the runway.
2—The LDA uses a course width of 6° or 12°, while an ILS uses only 5°.
3—The LDA does not use OM's or LOM's for the FAF.
4—The LDA signal is generated from a VOR type facility and has no glide slope.

6353. The minimum en route altitude for a segment of a jet airway, unless otherwise specified, on the En Route High Altitude Chart, is

1—24,000 feet MSL.
2—18,000 feet MSL.
3—14,500 feet MSL.
4—14,000 feet MSL.

6354. What is an airport advisory area?

1—That airspace within 5 statute miles of an airport, extending up to but not including 3,000 feet, within which a control tower is in operation.
2—That airspace within 10 statute miles of an airport which does not have a control tower but where an FSS is located.
3—That airspace identified by an area on the surface within which flight of an aircraft is subject to special restrictions.
4—The airspace which extends upward from the surface and terminates at the base of the CCA (continental control area).

6355. When should your transponder be set to Mode C while on an IFR flight?

1—Only when ATC requests Mode C.
2—At all times if the equipment has been calibrated, unless requested otherwise by ATC.
3—When passing 12,500 feet MSL.
4—Only when operating in TCA's, control zones, and on airways.

6356. Under which condition does ATC issue a STAR?

1—Only to airlines or military pilots without request.
2—To any pilot only upon request.
3—Only if the pilot requests a STAR in the "Remarks" section of the flight plan.
4—Only when ATC deems it appropriate, unless the pilot requests "No STAR."

6357. What is the recommended climb procedure when a non-radar departure control instructs a flight to climb to the assigned altitude?

1—Maintain a continuous optimum climb until reaching assigned altitude and report passing each 1,000-foot level.
2—Climb at a maximum angle of climb to within 1,000 feet of the assigned altitude, then 500 ft./min. in the last 1,000 feet.
3—Climb to within 1,000 feet of the assigned altitude on the right side of the airway, then join the airway.
4—Maintain an optimum climb on the centerline of the airway without intermediate level-offs until 1,000 feet below assigned altitude, then reduce climb to 500 ft./min.

6358. Which report should the pilot make without request when operating under IFR in controlled airspace while in radar contact?

1—When leaving the final approach fix inbound on final approach.
2—Time and altitude reaching a holding fix.
3—A corrected estimate at any time if it becomes apparent that a previous estimate is in error of more than 3 minutes.
4—At the compulsory reporting points shown on the en route chart along the route of flight.

6359. How does the wake turbulence vortex circulate around each wingtip?

1—Clockwise as viewed from behind.
2—Inward, upward, and counterclockwise.
3—Outward, upward, and around each tip.
4—Inward, upward, and around each tip.

6360. What approach and landing minima must prevail for an IFR flight cleared for a "Visual Approach"?

1—Basic VFR conditions (V_{MC}).
2—Ceiling which permits at least a 1,000-foot obstacle clearance.
3—1,000-foot ceiling and 1-mile visibility.
4—The same minima as the IFR approach to that runway.

6361. Which action is appropriate if a pilot becomes involved in a hijacking?

1—Transmit and receive on the special emergency (air piracy) frequency, 128.5.
2—Append the code word "PAPA" to the aircraft call sign during all radio transmissions.
3—Transmit "Code H" on 121.5.
4—Set Code 7500 on the aircraft transponder.

6362. Turbulence which, when less than one-third of the time, causes slight, rapid, and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude should be reported as

1—occasional light chop.
2—intermittent light chop.
3—moderate turbulence.
4—moderate chop.

6363. You are on an IFR flight in VFR conditions at 17,000 feet squawking 0437. Which transponder code should be set if you cancel your IFR flight plan and start a descent for landing?

1—Leave the transponder set to 0437 until passing through 10,000 feet, then set to 1200.
2—Set the transponder to 1200 immediately.
3—Leave the transponder set to 0437.
4—Leave the transponder set to 0437 until reaching 12,500 feet, then set to 1200.

6364. How wide is an SDF course?

1—Either 3° or 6°.
2—Either 6° or 12°.
3—Varies from 5° to 10°
4—10°

6365. Which information, in addition to headings, does the radar controller provide without request during an ASR approach?

1—The recommended altitude for each mile from the runway.
2—When reaching the MDA.
3—When to commence descent to MDA, the aircraft's position each mile on final from the runway, and arrival at the MAP.
4—Arrival at the end of the runway.

6366. In complying with speed adjustments requested by ATC, what airspeed should be maintained? The specified

1—indicated airspeed within plus or minus 10 knots.
2—true airspeed within plus or minus 5 knots.
3—groundspeed within plus or minus 10 knots.
4—true airspeed within plus or minus 10 knots.

6367. What radio fixes may be used to define an off-airway direct route on an IFR flight plan?

1—Any type fix that the pilot can see to determine a position.
2—Only radio fixes based on navigational aids established for use in a particular high or low altitude structure.
3—Any VHF or LF radio facility from which a fix can be established within 80 nautical miles of the succeeding fix.
4—Only established area navigation fixes not more than 80 nautical miles apart.

6368. What is the normal expected service range of an (L) class navigation aid as it appears on an En Route Low Altitude Chart?

1—60 nautical miles.
2—20 nautical miles.
3—30 nautical miles.
4—40 nautical miles.

6369. Which reports should the pilot make without request when operating under IFR in controlled airspace in radar contact?

1—When vacating any previously assigned altitude.
2—When leaving the final approach fix inbound on final approach.
3—Starting procedure turn inbound and any information relating to safety of flight.
4—A corrected estimate when an ETA is in error in excess of 2 minutes.

6370. When landing on an 8,000-foot long instrument runway, what distance from the rollout end of the runway will the runway edge lights be aviation yellow?

1—500 feet.
2—1,000 feet.
3—1,500 feet.
4—2,000 feet.

6371. When landing at night on an instrument runway, the high-intensity runway edge lights will be white until the last

1—4,000 feet or one-half the runway length, whichever is less.
2—3,500 feet or one-third the runway length, whichever is greater.
3—2,500 feet or one-fourth the runway length, whichever is greater.
4—2,000 feet or one-half the runway length, whichever is less.

6372. When designated in conjunction with an airport which has a published instrument approach procedure, what airspace is defined as a transition area?

1—That airspace extending upward from 700 feet or more AGL and terminating at the base of the overlying controlled airspace.
2—That airspace extending upward from the surface and terminating at the base of the overlying CCA (continental control area).
3—The airspace extending upward from the surface to 3,000 feet within a 5-statute mile radius from the center of an airport.
4—Areas that are designated as Group I or Group II TCA's for which all aircraft are subject to the operating rules of FAR Part 91.

6373. Turbulence that is encountered above 15,000 feet AGL not associated with cumuliform cloudiness, including thunderstorms, should be reported as

1—convective turbulence.
2—severe turbulence.
3—orographic turbulence.
4—clear air turbulence.

6374. How long before taxiing should a pre-taxi IFR clearance be requested? Not more than

1—5 minutes.
2—10 minutes.
3—15 minutes.
4—30 minutes.

6375. Every abbreviated IFR departure clearance (cleared as filed) will include the

1—clearance limit and en route altitude.
2—type of aircraft, clearance limit, SID, or STAR.
3—en route altitude, SID, and clearance limit.
4—destination airport, en route altitude, and SID, if appropriate.

6376. What are the differences between a visual approach and a contact approach?

1—The pilot must have the field in sight in VFR conditions for a contact approach; the pilot must request a visual approach.
2—The pilot must request a contact approach; the pilot may be assigned a visual approach.
3—The pilot must request a visual approach and report having the field in sight; ATC may assign a contact approach if VFR conditions exist.
4—Anytime the pilot reports the field in sight, ATC may clear the pilot for a contact approach; for a visual approach, the pilot must advise that the approach can be made under VFR conditions.

6377. How should a pilot report turbulence that, one-third to two-thirds of the time, causes changes in altitude and/or attitude, causes variations in indicated airspeed, while the aircraft remains in control?

1—Intermittent moderate chop.
2—Occasional moderate turbulence.
3—Intermittent moderate turbulence.
4—Occasional moderate chop.

6378. Which safety hazard will be avoided if the pilot remains behind the Category II holding line before receiving takeoff clearance during Category II operations?

1—Interference on the radar altimeter.
2—Interference with ILS guidance signals.
3—Clutter on the PAR scope.
4—Distortion of the inner marker signal.

6379. ATC issues a clearance for a "Visual Approach" within a TCA. If the airplane is turbine-engine-powered, this clearance

1—authorizes you to descend below the floor of the TCA if you are VFR.
2—does not authorize you to descend below the floor of the TCA.
3—is authorization to descend below the floor of the TCA if you are in radar contact with approach control.
4—authorizes you to descend below the floor of the TCA provided you are over a specific VFR checkpoint.

6380. The minimum en route altitude for a segment of a jet airway, unless otherwise specified on the En Route High Altitude Chart, is

1—24,000 feet MSL.
2—18,000 feet MSL.
3—14,500 feet MSL.
4—14,000 feet MSL.

6381. While making routine transponder code changes, you should avoid the inadvertent selection of

1—0700, 7700, 7600.
2—7700, 7600, 7500.
3—0000, 3100, 7700.
4—3333, 7600, 7700.

6382. What action is appropriate if a pilot receives a speed adjustment from ATC that is higher than cruise speed and is very difficult to attain?

1—The pilot must attempt to maintain the speed within 10 knots to avoid possible collision.
2—The pilot should cancel the IFR flight plan.
3—The pilot may descend to MEA or turn off the airway in lieu of a speed adjustment.
4—The pilot is expected to advise ATC of the speed that will be used.

6383. Which NOTAM data are appended to hourly Surface Aviation Weather Report?

1—NOTAM (D).
2—FDC NOTAM.
3—AIRAD.
4—NOTAM (L).

6384. Where may you use an ASR approach?

1—At any airport that has an approach control.
2—At any airport which has radar service.
3—At airports for which civil radar instrument approach minima have been published.
4—At any airport that has a DF facility.

6385. You receive the following clearance from ATC:

CLEARED TO DALLAS–LOVE AIRPORT AS FILED. MAINTAIN FIVE THOUSAND, TURN RIGHT TO ZERO SIX ZERO AFTER TAKEOFF SQUAWK FOUR TWO ONE FOUR JUST BEFORE DEPARTURE AND DEPARTURE CONTROL ONE TWO FOUR POINT SIX...

When should you contact departure control?

1—When in position on the active runway and cleared for takeoff.
2—When established on a heading of 060.
3—Prior to entering instrument conditions.
4—When instructed by the tower.

6386. What reports should be made if a flight is operating on an IFR clearance specifying "VFR on Top" in a non–radar environment?

1—The same reports that are required for any IFR flight.
2—All normal IFR reports except vacating altitudes.
3—All compulsory reporting points en route.
4—Only the reporting of unforecast weather.

6387. A pilot of a Category B airplane that has identified and passed the SQT NDB while executing a VOR RWY 9 approach to Rwy 9R at Melbourne Regional Airport (see Figure 17) may descend to a minimum of

1—387 feet HAT.
2—400 feet HAT.
3—420 feet HAT.
4—507 feet HAT.

6388. What type of approach lighting system is available for Rwy 9R at Melbourne Regional Airport? (See Figure 17 and Appendix 2, page 3.)

1—Short approach lighting system.
2—High–intensity approach lighting system.
3—Omnidirectional approach lighting system.
4—Medium–intensity approach lighting system.

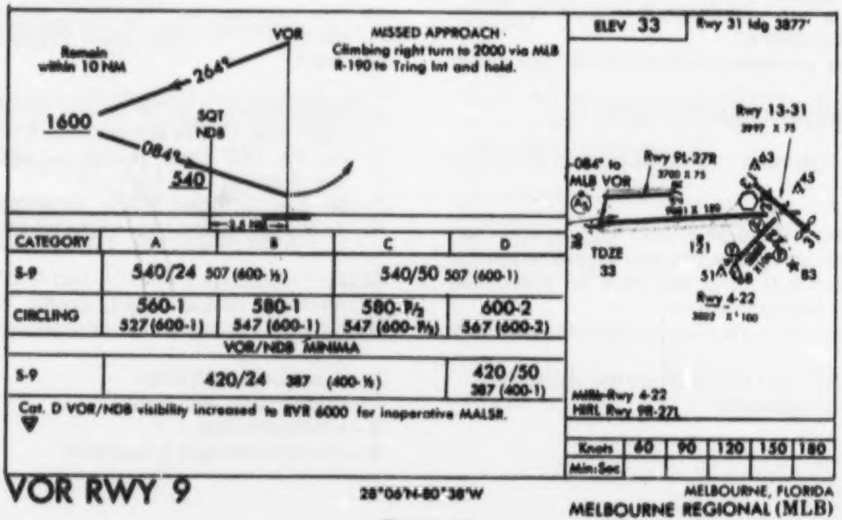

Remain within 10 NM
VOR
MISSED APPROACH
Climbing right turn to 2000 via MLB R-190 to Tring Int and hold.
264°
1600
SQT NDB
084°
540
3.5 NM
ELEV 33
Rwy 31 ldg 3877'
Rwy 13-31 3997 X 75
084° to MLB VOR
Rwy 9L-27R 3700 X 75
X 150
63
45
TDZE 33
121
51
83
Rwy 4-22 3002 X 100
CATEGORY A B C D
S-9 540/24 507 (600-½) 540/50 507 (600-1)
CIRCLING 560-1 527 (600-1) 580-1 547 (600-1) 580-1½ 547 (600-1½) 600-2 567 (600-2)
VOR/NDB MINIMA
S-9 420/24 387 (400-½) 420/50 387 (400-1)
Cat. D VOR/NDB visibility increased to RVR 6000 for inoperative MALSR.
MIRL Rwy 4-22
HIRL Rwy 9R-27L
Knots 60 90 120 150 180
Min:Sec
VOR RWY 9
28°06'N-80°38'W
MELBOURNE, FLORIDA
MELBOURNE REGIONAL (MLB)

Figure 17

6389. Where can the VOT frequency for a particular airport be found?

1—On the Instrument Approach Procedure Chart and in the Airport/Facility Directory.
2—In the Graphic Notices and Supplemental Data publication and on the Instrument Approach Procedure Chart.
3—Only in the Airport/Facility Directory.
4—In the Airport/Facility Directory and on the A/G voice communication panel of the En Route Low Altitude Chart.

6390. What is an airport traffic area?

1—That airspace within 5-statute miles of an airport which does not have a control tower but where an FSS is located.
2—The airspace identified by an area on the surface within which flight of an aircraft is subject to restrictions.
3—That airspace which extends upward from the surface and terminates at the base of the continental control area.
4—That airspace extending upward to, but not including 3,000 feet above airport elevation, within a 5-statute mile radius from the center of an airport which has an operating control tower.

6391. What procedure should be observed when a non-radar departure control instructs a flight to climb to the en route altitude?

1—Climb to the right of the airway centerline.
2—Climb at the maximum rate of climb.
3—Maintain a continuous climb without intermediate level-offs.
4—Report passing each 1,000-foot level.

6392. What does this symbol ▼ indicate when it appears on an instrument approach procedure chart?

1—Takeoff minima are standard, 1/2 statute mile, for a three-engine aircraft.
2—Takeoff minima are nonstandard and/or departure procedures are published.
3—Takeoff minima are nonstandard only for air carrier type airplanes.
4—A SID has been published for that airport.

6393. A "contact approach" is an approach procedure that may be used

1—when a pilot has filed to an airport with an approved instrument approach procedure and wishes to land at a nearby airport that does not have an authorized instrument approach procedure.
2—in lieu of conducting a standard instrument approach procedure.
3—if assigned by ATC and will facilitate the approach.
4—in lieu of a visual approach.

6394. When departing from an airport not served by a control tower, the issuance of a clearance containing a "void time" indicates that

1—ATC will assume the pilot has not departed if no transmission is received before the "void time."
2—the pilot must advise ATC as soon as possible, but no later than 30 minutes, of intentions if not off by the "void time."
3—ATC will protect the airspace only to the "void time."
4—the pilot must contact FSS and file a flight plan not later than the "void time" specified in the clearance.

6395. A clearance states:

". . . CRUISE FIVE THOUSAND . . . ."

Which is an appropriate procedure?

1—Climb to 5,000 feet MSL immediately and remain at that altitude until over the final approach fix for the destination airport.
2—One or more climbs to, or descents from, any altitude between the minimum IFR altitude and 5,000 feet MSL may be made without further ATC clearance.
3—Maintain 5,000 feet MSL until cleared to descend to a lower altitude by ATC.
4—Cruise at any altitude between 5,000 feet MSL and the minimum IFR altitude, and make an approach in accordance with standard instrument approach procedures.

6396. What response is expected when ATC issues an IFR clearance to a pilot?

1—Read back the entire clearance as required by regulation.
2—Read back altitudes, altitude restrictions, and vectors in the same sequence as given.
3—Readback should be unsolicited and spontaneous to confirm that the pilot understands all instructions.
4—Read back the initial route clearance, altitude assignments, and transponder codes.

6397. You are holding at an initial approach fix after having experienced two-way radio communications failure. When should you begin descent for the instrument approach?

1—Immediately, if within plus or minus 3 minutes of your flight plan ETA as amended by ATC.
2—At the EFC time, if this is within plus or minus 3 minutes of your flight plan ETA as amended by ATC.
3—At your flight plan ETA as amended by ATC.
4—At the EFC time as amended by ATC.

6398. Turbulence which, two-thirds of the time, momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw) should be reported as

1—occasional light chop.
2—intermittent light chop.
3—moderate chop.
4—intermittent light turbulence.

6399. Which radio call phraseology is appropriate for a civilian air ambulance flight on an urgent medical mission?

1—Medic Piper Six Five Five Golf.
2—Red Cross Aztec Two Four Six Four Alpha.
3—Lifeguard Cessna Two Six Four Six.
4—Air Ambulance Beech November Four Three Niner One Echo.

6400. What is the operational status of a VORTAC if you receive only a single coded identifier approximately every 30 seconds?

1—Maintenance is being performed and neither the VOR nor DME is operating normally.
2—The DME is inoperative; the VOR is operating normally.
3—Both the DME and VOR are operating normally.
4—The DME is operating normally; the VOR is inoperative.

6401. To assure expeditious handling of a civilian air ambulance flight, the word "LIFEGUARD" should be entered in which section of the flight plan?

1—Aircraft identification.
2—Aircraft type/special equipment.
3—Pilot's name and address block.
4—Remarks.

6402. What is required to fly IFR using an RNAV (area navigation) system?

1—Special aircraft and crew certification.
2—Prior permission from ATC in the form of a letter of agreement.
3—Radar monitoring by ATC.
4—Special aviation charts that depict the RNAV system.

6403. What is required to operate in an ARSA (airport radar service area)?

1—IFR flight plan.
2—4096 transponder with Mode C.
3—Instrument equipped aircraft and certified pilot.
4—Two-way radio communications.

6404. When an air taxi operator has not been issued an FAA authorized call sign, which call sign is recommended?

1—BONANZA SIX FIVE FIVE GOLF.
2—TANGO AZTEC TWO FOUR SIX FOUR ALPHA.
3—LIFEGUARD CESSNA TWO SIX FOUR SIX.
4—NOVEMBER FOUR THREE NINER ONE ECHO.

6405. Turbulence which causes changes in altitude and/or attitude more than two-thirds of the time, with the aircraft remaining in positive control at all times, should be reported as

1—continuous moderate turbulence.
2—intermittent light chop.
3—continuous severe chop.
4—intermittent moderate turbulence.

6406. Which range facility associated with the ILS is identified by the last two letters of the localizer identification group?

1—Inner marker.
2—Outer marker.
3—Outer compass locator.
4—Middle compass locator.

6407. Which indication warns a pilot that a VOR is undergoing maintenance and may be unreliable?

1—Absence of coded identification.
2—Coded identification but no navigation indications.
3—Coded identification but an intermittent "OFF" flag.
4—Voice recording announcing, "VOR OUT FOR MAINTENANCE."

6408. Approximately what height is the glide slope centerline at the MM of a typical ILS?

1—100 feet.
2—200 feet.
3—300 feet.
4—500 feet.

6409. The vertical extent of the positive control area throughout the conterminous United States is from

1—FL240 to FL600.
2—18,000 feet to FL600.
3—18,000 feet to FL450.
4—14,500 feet to FL450.

6410. Refer to the following excerpt from an hourly SA report:

XYZ...183/93/45/2115/993...

Using the necessary information, at approximately what altitude AGL should you expect the bases of convective-type cumuliform clouds?

1—4,000 feet.
2—16,000 feet.
3—10,000 feet.
4—12,000 feet.

6411. The absence of a visibility entry in a terminal forecast specifically implies that the surface visibility

1—exceeds basic VFR minima.
2—is at least 1 statute mile above the minimum visibility requirement for an approach to the primary instrument runway.
3—exceeds 6 statute miles.
4—is at least 15 statute miles in all directions from the center of the runway complex.

6412. Flight service stations in the conterminous 48 United States having voice capability on VOR's or radiobeacons (NDB's) broadcast

1—hourly weather reports at 15 minutes past each hour from reporting points within 150 nautical miles of the broadcast stations.
2—hourly weather reports at 15 and 45 minutes past each hour for those reporting stations within approximately 150 nautical miles of the broadcast stations.
3—AIRMET's and SIGMET's at 15 minutes past the hour and each 15 minutes thereafter as long as they are in effect.
4—AIRMET's and non-convective SIGMET's at 15 minutes and 45 minutes past the hour for the first hour after issuance.

6413. The body of an FT (Terminal Forecast) covers a geographical area within

1—a 5-mile radius of the center of a runway complex.
2—25 miles of the center of an airport.
3—10 miles of the station originating the FT.
4—a 10-mile radius of the center of the airport.

6414. What expected windspeed is specifically implied at 2200Z by this Terminal Forecast for Memphis?

MEM 251010 C5 X 1/2F 1710 OCNL CO X 1/2F. 16Z C25 BKN 11/2F 1720. 22Z 20 SCT. 00Z CLR.

1—Less than 3 knots.
2—Less than 5 knots.
3—Less than 10 knots.
4—Calm and variable.

6415. What is specifically implied by the omission of visibility and wind entries in the terminal forecast?

1—Visibility more than 3 miles; wind less than 15 knots.
2—Visibility more than 6 miles; wind less than 10 knots.
3—Visibility more than 10 miles; wind less than 7 knots.
4—Visibility more than 15 miles; wind less than 3 knots.

6416. The section of the area forecast entitled FLT PRCTN contains

1—a summary of the expected hazardous weather.
2—a statement listing those AIRMETS still in effect.
3—a summary of general weather conditions over several states.
4—the statement TSTMS IMPLY PSBL SVR OR GTR TURBC, SVR ICG, AND LOW-LVL WIND SHEAR.

6417. A pilot planning to depart at 1100Z on an IFR flight is concerned about the hazard of icing. What sources reflect the most accurate information on current and forecast icing conditions at the time of departure?

1—Convective SIGMETS (WST), Freezing Level Chart, and RADATS.
2—Low Level Sig Weather Prog Chart, RADATS, and the Area Forecast.
3—PIREPS, Area Forecast, and the Freezing Level Chart.
4—PIREPS, AIRMETS, and SIGMETS.

6418. Which of the following meteorological conditions is issued in the form of a SIGMET (WS)?

1—Widespread sand or dust storms lowering visibility to less than 3 miles.
2—Moderate icing.
3—Widespread areas of fog.
4—Sustained winds of 30 knots or greater at the surface.

6419. At what time are current AIRMET's broadcast in their entirety by the FSS?

1—15 minutes after the hour only.
2—Every 15 minutes until the AIRMET is canceled.
3—15 and 45 minutes after the hour during the first hour after issuance.
4—On the hour and each 15 minutes thereafter for 1 hour after issuance.

6420. What wind direction and speed is represented by the entry 9900+00, for 9,000 feet, on a Winds and Temperatures Aloft Forecast?

1—090° and calm.
2—Light and variable; less than 5 knots.
3—Vortex winds exceeding 200 knots.
4—Light and variable; less than 10 knots.

6421. What is meant by the entry in the remarks section of this Surface Aviation Weather Report for BOI?

BOI SP 1854 -X M7 OVC 1 1/2R+F 990/63/61/
3205/980/RF2 RB12

1—Runway fog, visibility 2 miles; runway braking reduced 12 percent.
2—Runway fog, visibility 2 miles; base of the rain clouds 1,200 feet.
3—Rain and fog obscuring two-tenths of the sky; rain began 12 minutes before the hour.
4—Rain and fog obscuring two-tenths of the sky; rain began 12 minutes after the hour.

6422. A Weather Depiction Chart most correctly represents

1—actual sky cover, visibility restrictions, and type of precipitation at selected stations.
2—forecast ceilings and visibilities over a large geographic area.
3—en route weather conditions between reporting stations.
4—weather resulting from convective activity.

6423. What is the single source reference that contains information regarding frontal movement, turbulence, and icing conditions for a specific area?

1—FT (Terminal Forecast).
2—500 MB Prognostic Chart.
3—Weather Depiction Chart.
4—FA (Area Forecast).

6424. A station is forecasting wind and temperature aloft at FL390 to be 300° at 200 knots; temperature -54° C. How would this data be encoded in the FD?

1—8099-54.
2—300054.
3—809954.
4—309954.

6425. What is the valid time period for an FA (Area Forecast)?

1—24 hours, plus an 8-hour outlook.
2—8 hours, plus a 12-hour outlook.
3—18 hours, plus a 12-hour outlook.
4—12 hours, plus a 6-hour outlook.

6426. If squalls are reported at your destination, what wind conditions should you anticipate?

1—At least 60° variation in wind direction with speeds above 25 knots.
2—Sudden increases in windspeed of at least 15 knots or more lasting for at least 1 minute.
3—Peak gusts of at least 35 knots for a sustained period of 1 minute or longer.
4—Rapid variation in wind direction of at least 20° and changes in speed of at least 10 knots between peaks and lulls.

6427. Refer to the following excerpt from an hourly SA report:

LAX...172/86/72/3010/994...

Using the necessary information, at approximately what altitude AGL should you expect the bases of convective-type cumuliform clouds?

1—1,500 feet.
2—2,400 feet.
3—3,500 feet.
4—4,700 feet.

6428. Which weather chart depicts the conditions forecast to exist at a specific time in the future?

1—Surface analysis.
2—Prognostic.
3—Weather depiction.
4—Radar summary.

6429. What is the significance of the "RB32" entered in the Remarks of this SA 191100 for FSM?

FSM...25 SCT M44 OVC 7RW—093/71/68/0000/
983/RB32

1—Rain began at 1032Z at FSM.
2—The runway barrier (arresting gear) for Rwy 32 is inoperative.
3—The maximum weight limitation (runway bearing) is 32,000 pounds.
4—Runway braking factor is 32.

6430. Temperature in aviation weather is expressed in either Fahrenheit or Centigrade (Celsius). On which type of report is each used?

1—Fahrenheit on hourly aviation observations, and Centigrade on special observations.
2—Fahrenheit on all weather reports, and Centigrade on all forecasts.
3—Fahrenheit on all surface temperatures, and Centigrade on all temperatures aloft.
4—Fahrenheit on all general aviation weather reports, and Centigrade on all military and airline reports.

6431. What term is used to classify a sudden increase in windspeed of at least 15 knots to a sustained speed of 20 knots or more for at least 1 minute's duration?

1—Gust.
2—Squall.
3—Katabatic wind.
4—COL wind.

6432. The word "WIND" in the 6-hour categorical outlook in the terminal forecast means that the wind during that period is forecast to be

1—40 knots plus.
2—35 knots with gusts.
3—over 50 knots.
4—25 knots or greater.

6433. How are forecast winds aloft stated with respect to direction and speed? Direction relative to

1—magnetic north and speed in knots.
2—true north and speed in knots.
3—magnetic north and speed in miles per hour.
4—true north and speed in miles per hour.

6434. The Surface Analysis Chart depicts

1—actual pressure systems, frontal locations, cloud tops, and precipitation at the time shown on the chart.
2—frontal locations and expected movement, pressure centers, cloud coverage, and obstructions to vision at the time of chart transmission.
3—actual frontal positions, pressure patterns, temperature, dewpoint, wind, weather, and obstructions to vision at the valid time of the chart.
4—actual pressure distribution, frontal systems, cloud heights and coverage, temperature, dewpoint, and wind at the time shown on the chart.

6435. What significant cloud coverage is reported by a pilot in this SA?

MOB...M9 OVC 2LF 131/44/43/3212/991/UA/OV 15NW MOB 1355/SK OVC 025/045 OVC 090

1—Three separate overcast layers exist with tops at 2,500, 7,500, and 13,500 feet.
2—Three separate overcast layers exist with bases at 2,500, 7,500, and 13,500 feet.
3—The top of lower overcast is 2,500 feet; base and top of second overcast layer is 4,500 and 9,000 feet, respectively.
4—The base of second overcast layer is 2,500 feet; top of second overcast layer is 7,500 feet; base of third layer is 13,500 feet.

6436. From which primary source should you obtain information regarding the weather expected to exist at your destination at your estimated time of arrival?

1—Low Level Prog Chart.
2—Weather Depiction Chart.
3—Radar Summary and Weather Depiction Chart.
4—FT (Terminal Forecast).

6437. Omission of a wind entry in a terminal forecast specifically implies that the wind is expected to be less than

1—5 knots.
2—6 knots.
3—8 knots.
4—10 knots.

6438. Which conditions are most conducive to the formation of radiation fog?

1—Warm, moist air over flatland areas on clear nights with calm winds.
2—Moist, tropical air moving over cold offshore water.
3—The movement of cold air over much warmer water.
4—A warm, moist air mass on the windward side of mountains.

6439. Which term applies when the temperature of the air changes by compression or expansion but no heat is added or removed?

1—Katabatic.
2—Coriolis.
3—Advection.
4—Adiabatic.

6440. Which weather forecast describes prospects for an area coverage of both severe and general thunderstorms during the following 24 hours?

1—Terminal Forecast.
2—Convective Outlook.
3—Severe Weather Watch Bulletin.
4—Special Flight Forecast.

6441. The Significant Weather Prognostic Chart shows weather conditions

1—that are forecast to exist at the valid time of the chart.
2—as they existed at the time the chart was prepared.
3—that existed at the time shown on the chart which is about 3 hours before the chart is received.
4—that are forecast to exist 6 hours after the chart was prepared.

6442. The Weather Depiction Chart in Figure 18 indicates that the coastal stations of Texas are reporting

1—ceilings of 2,000 feet with breaks in overcast.
2—visibilities of 20 miles or more.
3—marginal VFR conditions due to broken ceilings.
4—VFR conditions with scattered clouds.

6443. The Weather Depiction Chart in Figure 18 indicates the heaviest precipitation along the front is occurring in

1—Oklahoma.
2—New Mexico.
3—Illinois.
4—Kansas.

6444. The Weather Depiction Chart in Figure 18 indicates that northern Illinois and southern Wisconsin are reporting

1—marginal VFR conditions due to reduced visibility in drizzle and fog.
2—low IFR conditions due to ceilings below 500 feet with drizzle.
3—IFR conditions due to overcast ceilings less than 1,000 feet with reduced visibilities in rain and rain showers.
4—VFR ceilings but reduced visibilities due to fog and haze.

6445. The Weather Depiction Chart in Figure 18 indicates that most of Virginia is reporting

1—marginal VFR conditions due to extensive low ceilings.
2—marginal VFR conditions due to reduced visibilities in fog and haze.
3—IFR conditions due to very low visibilities and frontal buildups.
4—continuous rain and rain showers due to warm air advection.

6446. What restrictions to visibility, if any, are depicted in southwestern Missouri? (See Figure 18.)

1—Fog and haze.
2—Fog, rain, and haze.
3—Drizzle, fog, and rain.
4—Ground fog or fog.

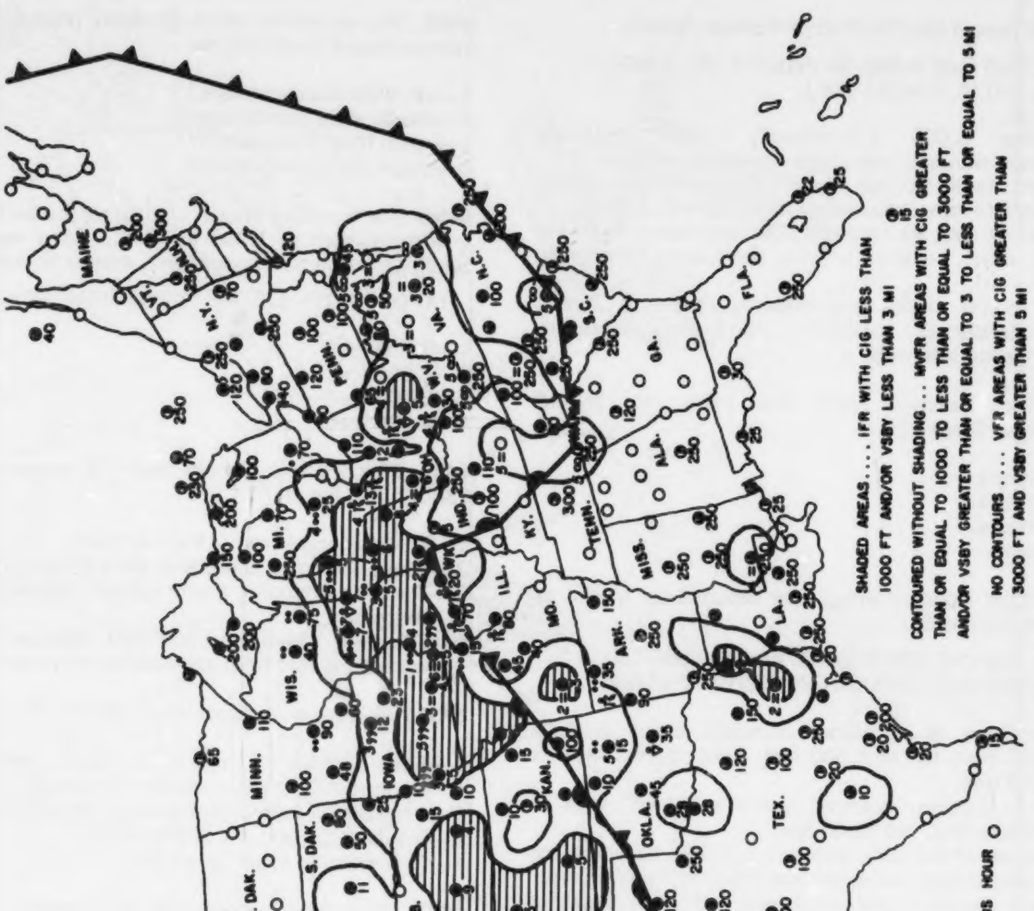

SHADED AREAS.... IFR WITH CIG LESS THAN 1000 FT AND/OR VSBY LESS THAN 3 MI
CONTOURED WITHOUT SHADING.... MVFR AREAS WITH CIG GREATER THAN OR EQUAL TO 1000 TO LESS THAN OR EQUAL TO 3000 FT AND/OR VSBY GREATER THAN OR EQUAL TO 3 TO LESS THAN OR EQUAL TO 5 MI
NO CONTOURS .... VFR AREAS WITH CIG GREATER THAN 3000 FT AND VSBY GREATER THAN 5 MI
FRONTAL POSITION FROM PREVIOUS HOUR
04Z TUE 28 JUL
N042 D088
WEATHER DEPICTION
TOTAL STATIONS AVAILABLE FOR ANALYSIS 407 OUT OF 561
MAINE
VT.
N.H.
N.Y.
PENN.
VA.
W.V.
N.C.
S.C.
GA.
FLA.
ALA.
MISS.
TENN.
KY.
IND.
MI.
ILL.
WIS.
MINN.
IOWA
MO.
ARK.
LA.
TEX.
OKLA.
KAN.
NEB.
S. DAK.
N. DAK.
MONT.
WYO.
COLO.
N.MEX.
ARIZ.
UTAH
IDAHO
NEV.
CALIF.
ORE.
WASH.

Figure 18

6447. Interpret the PIREP (Pilot Weather Report).

UA/OVR MRB FL060/SK INTMTLY BL/TB MDT/
RM R TURBC INCRS WWD.

1—Ceiling 6,000 intermittently below moderate thundershowers; turbulence increasing westward.
2—Flight level 60,000, intermittently below clouds; moderate rain, turbulence increasing with the wind.
3—At 6,000 feet; intermittently between layers; moderate turbulence; moderate rain; turbulence increasing westward.
4—At 6,000 feet; intermittently between layers; thunderstorms moderate; rain and turbulence increasing with wind.

6448. The maximum valid time period for an AC (Convective Outlook) is

1—24 hours.
2—18 hours.
3—12 hours.
4—8 hours.

6449. What cloud coverage was reported by a pilot as indicated by this SA?

MSY...M8 OVC 2RW–132/45/44/3010/990/UA/
OV 17NW MSY 1845/SK OVC 020/045 OVC 090

1—The base of a second overcast cloud layer is 2,000 feet, top at 4,500 feet; base of third layer is 9,000 feet.
2—Three separate overcast layers exist with tops at 2,000, 4,500, and 9,000 feet.
3—The top of the lower overcast is 2,000; base and top of second layer are 4,500 and 9,000 feet respectively.
4—Three separate overcast layers exist with bases at 2,000, 4,500, and 9,000 feet respectively.

6450. Which forecast provides specific information concerning expected sky cover, cloud tops, visibility, weather and obstructions to vision in a route format?

1—FA.
2—FT.
3—TWEB.
4—WA.

6451. How often are terminal forecasts issued, and what is the valid time period of each?

1—Three times daily; valid for 8 hours.
2—Two times daily; valid for 12 hours.
3—Every 6 hours; valid for 12 hours.
4—Three times daily; valid for 24 hours.

6452. An FT (Terminal Forecast) is issued at specific times in the U.S. for a geographical area within

1—25 miles of the center of an airport.
2—a 15–mile radius of a control tower.
3—a 10–mile radius of the reporting station.
4—a 5–mile radius of the center of a runway complex.

6453. Thunderstorms which generally produce the mos
intense hazard to aircraft are

1—air mass thunderstorms.
2—steady state thunderstorms.
3—warm front thunderstorms.
4—squall line thunderstorms.

6454. The reporting station originating the SA below, ha
a field elevation of 1,000 feet MSL. If the reported sk
condition is one continuous layer, what is its thickness?

M7 OVC 1/2FK 172/34/33/0000/003/OVC 50

1—3,300 feet.
2—4,000 feet.
3—5,000 feet.
4—4,300 feet.

6455. Which area(s) should have the lowest ceilings a
1800Z? (See Figure 19.)

1—The area just ahead of the cold front.
2—About 150 miles ahead and along the cold front.
3—The area extending from northern Kansas to wester
Wisconsin.
4—The areas where precipitation is expected to occur -
east of the cold front and west of the warm front.

6456. Where is snow expected at 1800Z? (See Figure 19.)

1—From northwest Kansas to the Great Lakes and fron
northwest Colorado northward to Canada.
2—Immediately behind and ahead of the cold front.
3—Northern Oregon and Washington.
4—In the central Great Lakes area.

6457. What type precipitation is expected in easter
Arkansas at 1800Z? (See Figure 19.)

1—Rain showers and thunderstorms affecting .5 or mor
of the area.
2—Rain showers over the entire area.
3—Continuous rain in .5 or more of the area.
4—Continuous rain over the entire area.

6458. At what altitude is the freezing level in centra
Oklahoma as forecast on the 24–hour significant weathe
prog? (See Figure 19.)

1—4,000 feet MSL.
2—5,000 feet MSL.
3—6,000 feet MSL.
4—8,000 feet MSL.

6459. At what altitude is the freezing level in central
Oklahoma as forecast on the 12–hour significant weather
prog? (See Figure 19.)

1—On the surface.
2—800 feet AGL.
3—4,000 feet MSL.
4—8,000 feet MSL.

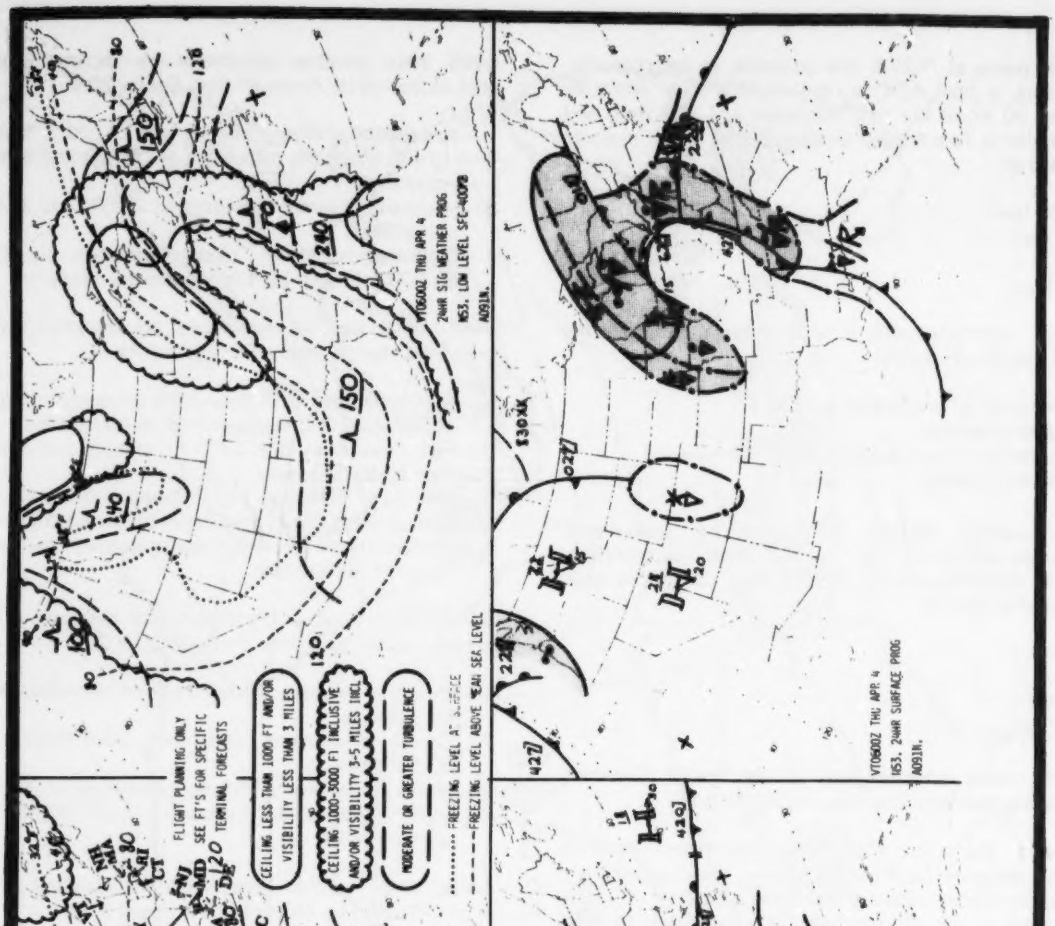

VT1800Z WED APR 3
12HR SIG WEATHER PROG
N53. LOW LEVEL SFC-400MB
TSTMS IMPLY MDT OR GTR TURBC SEE PANELS BELOW
FLIGHT PLANNING ONLY
SEE FT'S FOR SPECIFIC
TERMINAL FORECASTS
CEILING LESS THAN 1000 FT AND/OR VISIBILITY LESS THAN 3 MILES
CEILING 1000-3000 FT INCLUSIVE AND/OR VISIBILITY 3-5 MILES INCL
MODERATE OR GREATER TURBULENCE
FREEZING LEVEL AT SURFACE
FREEZING LEVEL ABOVE MEAN SEA LEVEL
VT0600Z THU APR 4
24HR SIG WEATHER PROG
N53. LOW LEVEL SFC-400MB
A091N.
VT1800Z WED APR 3
N53. 12HR SURFACE PROG
A091N. FXUS
VT0600Z THU APR 4
N53. 24HR SURFACE PROG
A091N.

Figure 19

6460. En route at FL270, the altimeter is set correctly. On descent, a pilot fails to reset it to a local altimeter setting of 30.32. If the field elevation is 1,300 feet, and the altimeter is functioning properly, what will it indicate after landing?

1—1,700 feet.
2—900 feet.
3—400 feet.
4—Sea level.

6461. Fog associated with a warm front is generally the result of saturation due to

1—evaporation of precipitation.
2—adiabatic cooling.
3—evaporation of surface moisture.
4—nocturnal cooling.

6462. A certain station is forecasting wind and temperature aloft to be 280° at 205 knots; temperature -51° C at 39,000 pressure altitude. How would this data be encoded in the FD?

1—7800-51.
2—789951.
3—2899-51.
4—280051.

6463. For most effective use of the Radar Summary Chart during preflight planning, a pilot should

1—consult the chart to determine more accurate measurements of freezing levels, cloud cover, and wind conditions between reporting stations.
2—compare it with the Weather Depiction Chart to get a three-dimensional picture of clouds and precipitation.
3—utilize the chart as the only source of information regarding storms and hazardous conditions existing between reporting stations.
4—utilize the chart as the best source of information for ceilings, cloud tops, and cloud coverage between reporting stations.

6464. What information is provided by the Radar Summary Chart that is not shown on other weather charts?

1—Lines and cells of hazardous thunderstorms.
2—Ceilings and precipitation between reporting stations.
3—Types of precipitation between reporting stations.
4—Areas of cloud cover and icing levels within the clouds.

6465. What weather conditions are depicted within the area indicated by Arrow A? (See Figure 20.)

1—Few cirriform clouds with bases at 33,000 feet.
2—Few cumuliform clouds; tops above 33,000 feet.
3—Few (less than one-tenth coverage) cumulonimbus; tops below 33,000 feet.
4—Few (less than one-eighth coverage) cumulonimbus; tops at 33,000 feet.

6466. What weather conditions are depicted within the area indicated by Arrow B? (See Figure 20.)

1—Moderate to severe turbulence from 25,000 to 30,000 feet.
2—Light to moderate turbulence at 25,000 and 30,000 feet respectively.
3—Moderate to severe turbulence at 25,000 and 30,000 feet respectively.
4—Scattered cirriform clouds between 25,000 and 30,000 feet with light to moderate turbulence.

6467. What weather conditions are depicted within the area indicated by Arrow D? (See Figure 20.)

1—Scattered (less than one-tenth coverage) cumuliform; bases at 24,000 feet and tops at 40,000 feet.
2—Few (less than one-tenth coverage) cumulonimbus; tops at 40,000 feet.
3—Few (less than one-eighth coverage) cumulonimbus; tops at 40,000 feet and bases below 24,000 feet.
4—Broken (more than six-eighths coverage) cirriform; bases at 40,000 feet.

6468. What weather conditions are depicted within the area indicated by Arrow E? (See Figure 20.)

1—Moderate to severe turbulence from below 24,000 feet to 29,000 feet.
2—Severe to extreme turbulence from 20,000 feet to 39,000 feet.
3—Moderate to severe turbulence starting at 29,000 feet.
4—Light to moderate turbulence from 29,000 feet to undetermined height.

6469. What weather conditions are depicted within the area indicated by Arrow F? (See Figure 20.)

1—Three layers cirriform clouds; top of highest layer is 34,000 feet.
2—Three-eighths coverage; layered cirriform clouds; bases below 24,000 feet and tops 34,000 feet.
3—Three layers cumulonimbus clouds; base of lowest layer 34,000 feet; top of highest layer undetermined.
4—Three-tenths coverage; layered cirriform clouds; bases at 34,000 feet.

6470. What weather conditions are depicted within the area indicated by Arrow G? (See Figure 20.)

1—Three-eighths coverage; multiple layers of stratiform clouds from 25,000 to 35,000 feet.
2—Three-tenths coverage; three layers cirriform clouds from 25,000 to 35,000 feet.
3—Three layers cumuliform clouds between 25,000 and 35,000 feet.
4—Three-eighths coverage; layered cirriform clouds; bases and tops at 25,000 and 35,000 feet respectively.

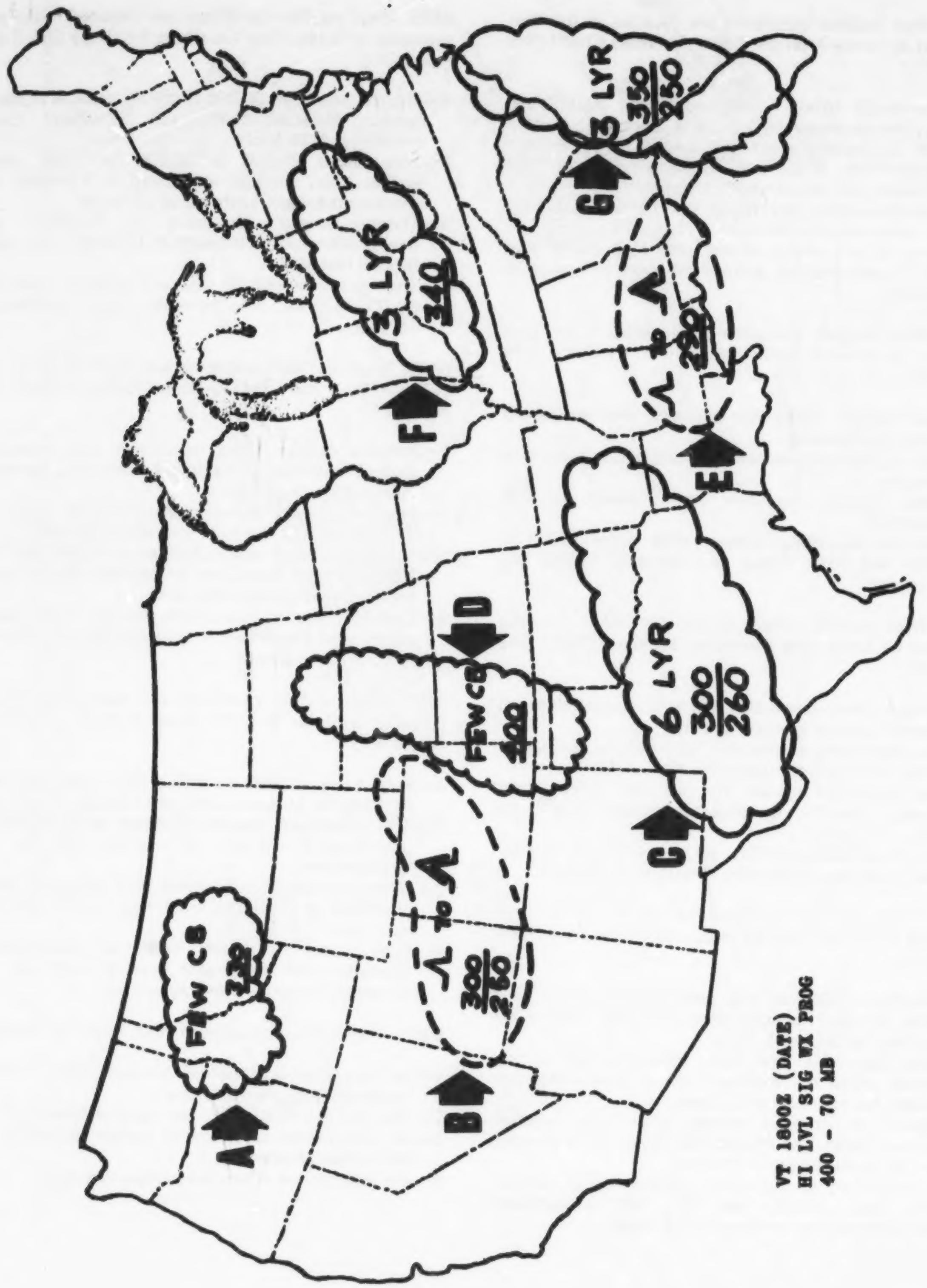

A
FEW CB
320
B
300
260
C
6 LYR
300
260
D
FEW CB
400
E
290
F
3 LYR
340
G
3 LYR
350
250
VT 1800Z (DATE)
HI LVL SIG WX PROG
400 - 70 MB

Figure 20

6471. What weather conditions are depicted in the area indicated by Arrow A on the Radar Summary Chart? (See Figure 21.)

1—Moderate to strong echoes; echo tops 30,000 feet MSL; line movement toward the northwest.
2—Weak to moderate echoes; average echo bases 30,000 feet MSL; cell movement toward the southeast; rain showers with thunder.
3—Moderate echoes; echo bases 3,000 feet MSL; limited cell movement; rain showers.
4—Strong to very strong echoes; echo tops 30,000 feet MSL; thundershowers and rain showers increasing in intensity.

6472. What weather conditions are depicted in the area indicated by Arrow B on the Radar Summary Chart? (See Figure 21.)

1—Weak echoes; heavy rain showers; area movement toward the southeast.
2—Weak to moderate echoes; rain showers increasing in intensity.
3—Strong echoes; moderate rain showers; no cell movement.
4—Moderate to strong echoes; echo bases 2,200 to 3,000 feet MSL; heavy rain showers; limited cell movement.

6473. What weather conditions are depicted in the area indicated by Arrow C on the Radar Summary Chart? (See Figure 21.)

1—Average echo bases 2,800 feet MSL; thundershowers; intense to extreme echo intensity.
2—Cell movement toward the northwest at 20 knots; intense echoes; echo bases 28,000 feet MSL.
3—Area movement toward the northeast at 20 knots; strong to very strong echoes; echo tops 28,000 feet MSL.
4—Echo tops 2,800 feet MSL; very heavy thunderstorms; area movement toward the northwest at 20 knots.

6474. What weather conditions are depicted in the area indicated by Arrow D on the Radar Summary Chart? (See Figure 21.)

1—Echo tops 2,900 feet MSL; intense to extreme echoes within smallest contour; area movement toward the northeast at 50 knots.
2—Echo tops 4,100 feet MSL; strong to very strong echoes within the smallest contour; area movement toward the northeast at 50 knots.
3—Intense to extreme echoes within the smallest contour; echo tops 29,000 feet MSL; cell movement toward the northeast at 50 knots.
4—Strong to very strong echoes within smallest contour; echo bases 29,000 feet MSL; cell in northeast Nebraska moving northeast at 50 knots.

6475. What weather conditions are depicted in the area indicated by Arrow E on the Radar Summary Chart? (See Figure 21.)

1—Highest echo tops 30,000 feet MSL; weak to moderate echoes; thundershowers; cell movement toward northwest at 15 knots.
2—Echo bases 29,000 to 30,000 feet MSL; strong echoes; rain showers increasing in intensity; area movement toward northwest at 15 knots.
3—Thundershowers decreasing in intensity; area movement toward northwest at 15 knots; echo bases 30,000 feet MSL.
4—Thunderstorms with no change in intensity; echo tops 30,000 feet AGL; area movement toward northeast at 15 knots.

6476. What weather conditions are depicted in the area indicated by Arrow F on the Radar Summary Chart? (See Figure 21.)

1—Extreme echoes along solid line; area movement toward northeast at 44 to 45 knots; thunderstorms increasing in intensity.
2—Line of echoes; thunderstorms; highest echo tops 46,000 feet MSL; no cell movement indicated.
3—Echo bases vary from 15,000 feet to 46,000 feet MSL; thunderstorms increasing in intensity; line of echoes moving rapidly toward the north.
4—Line of severe thunderstorms moving from south to north; echo bases vary from 4,400 feet to 4,600 feet MSL; extreme echoes.

6477. What weather conditions are depicted in the area indicated by Arrow G on the Radar Summary Chart? (See Figure 21.)

1—Echo bases 10,000 feet MSL; cell movement toward northeast at 15 knots; weak to moderate echoes; rain.
2—Area movement toward northeast at 15 knots; rain decreasing in intensity; echo bases 1,000 feet MSL; strong echoes.
3—Strong to very strong echoes; area movement toward northeast at 15 knots; echo tops 10,000 feet MSL; light rain.
4—Echo bases 1,000 feet MSL; rain decreasing in intensity; cell movement toward northeast at 15 knots; moderate intensity echoes.

6478. The meteorological term "COL" may be defined as

1—an elongated area of low pressure along a line of maximum cyclonic curvature.
2—the neutral area between two highs and two lows.
3—an anticyclonic curvature of isobars centering on a high pressure anomaly.
4—the intersection of two low pressure troughs.

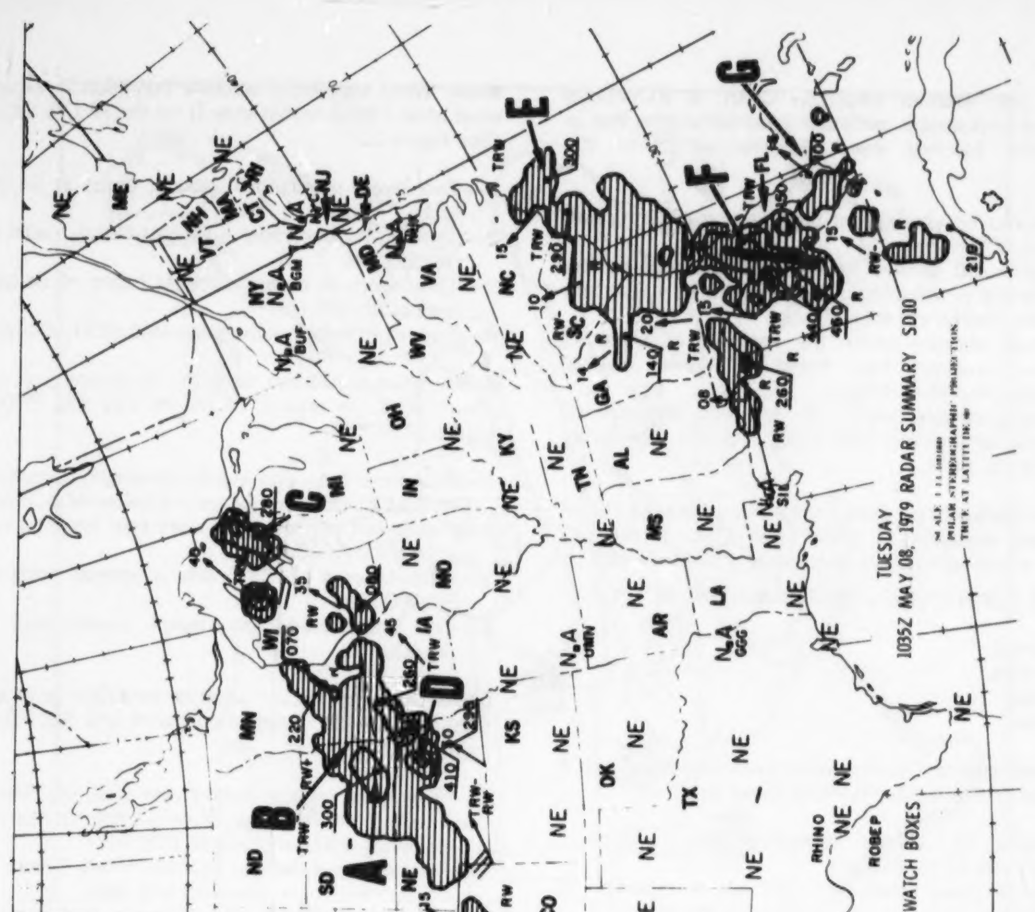

A
B
C
D
E
F
G
LEGEND
SHADING--ECHO AREAS
CONTOURS AT INTENSITIES 1-3-5
TOPS 999--BASES 999--100S OF FT
MVMT--AREAS + LINES--PENNANTS
MVMT--CELLS--ARROWS WITH SPEED
PRECIP TYPE AND CHANGE OF INTENSITY
+ IS NEW OR INCRG. - IS DCRG.
WEATHER WATCH BOXES
NONE
TUESDAY
1035Z MAY 08, 1979 RADAR SUMMARY SD10

Figure 21

6479. On the Weather Depiction Chart, a continuous smooth line enclosing a particular geographic area that is shaded with hatched lines indicates which of the following?

1—Continuous or intermittent precipitation covering half or more of the area.
2—More than 50 percent of the area enclosed by the smooth line is reporting ceilings less than 1,000 feet and/or visibility less than 3 miles.
3—Reporting stations within the enclosed area are all reporting ceilings less than 1,000 feet and/or visibilities less than 3 miles.
4—Reporting stations within the enclosed area are all reporting ceilings less than 3,000 feet and/or visibility less than 5 miles.

6480. The station originating the following weather report has a field elevation of 2,100 feet MSL. If the sky condition is one continuous layer, what is its thickness?

W3 X 1/4FH 172/71/72/0000/003/OVC 28

1—2,500 feet.
2—2,400 feet.
3—700 feet.
4—300 feet.

6481. What significant weather condition is depicted in area A as indicated on the HI LVL SIG PROG? (See Figure 22.)

1—Moderate to severe turbulence from below 24,000 feet to 35,000 feet.
2—Scattered cloud coverage with bases reported at 35,000 feet.
3—Light to moderate clear air turbulence with base of turbulence at 35,000 feet.
4—Broken cloud coverage with bases at 35,000 feet with moderate to severe turbulence.

6482. What significant weather condition is expected to exist within area B as depicted on the HI LVL SIG PROG? (See Figure 22.)

1—Light to moderate turbulence from 39,000 feet to 40,000 feet inclusive.
2—Moderate to severe turbulence from 39,000 feet to above 63,000 feet.
3—Light to moderate clear air turbulence from 24,000 feet to 39,000 feet.
4—Moderate to severe turbulence from 24,000 feet to 39,000 feet.

6483. What significant weather conditions are expected to exist within area C as depicted on the HI LVL SIG PROG? (See Figure 22.)

1—Four layers of cirriform clouds from 27,000 feet to 35,000 feet.
2—Four–tenths coverage; layered cumuliform clouds; bases at 27,000 feet; tops at 35,000 feet.
3—Four–eighths coverage; layered cirriform clouds; bases at 27,000 feet, and tops at 35,000 feet.
4—Multi–layered cirriform clouds; eight–tenths coverage from 27,000 feet to 35,000 feet.

6484. What significant weather condition is expected to exist after 1800Z within area D on the HI LVL SIG PROG? (See Figure 22.)

1—Two layers of cirriform clouds; bases at 34,000 feet MSL.
2—Two–tenths coverage; cirriform clouds; with tops at 34,000 feet.
3—Two layers of cumulonimbus; bases at 34,000 feet; tops at 45,000 feet.
4—Two–eighths cumulonimbus; tops at 34,000 feet.

6485. What significant weather conditions are expected after 1800Z, in area E of the HI LVL SIG PROG? (See Figure 22.)

1—Few (less than one–eighth coverage) cumulonimbus; tops at 33,000 feet; bases are below 24,000 feet.
2—Few (less than one–tenth coverage) towering cumulus; tops above 33,000 feet.
3—Multi–layered cirriform clouds; overall bases average 33,000 feet.
4—Few cirrostratus cloud layers; overall tops average 33,000 feet.

6486. What significant weather condition is expected to exist in area F as depicted on the HI LVL SIG PROG? (See Figure 22.)

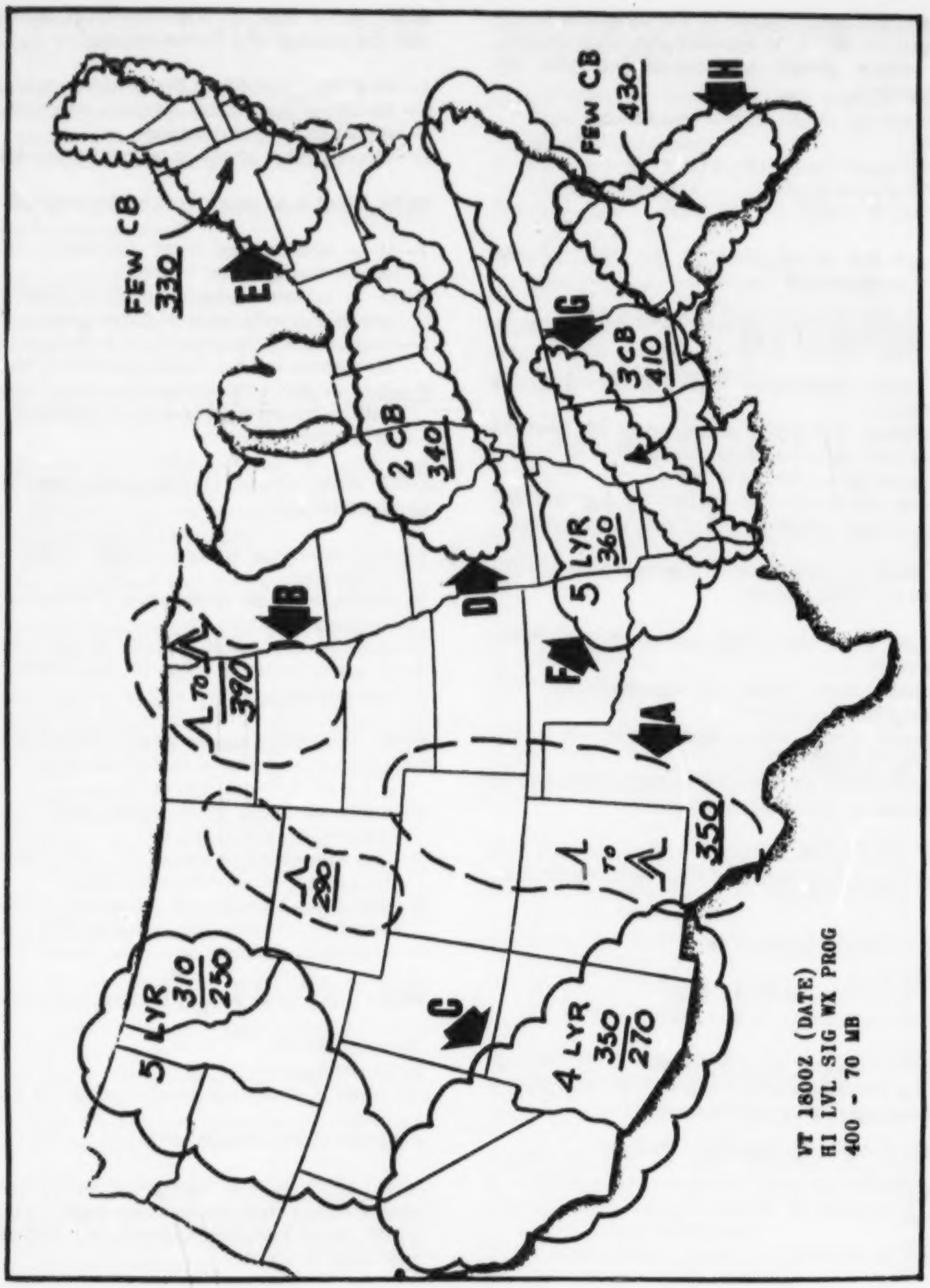
1—Five layers; base of lowest layer at 36,000 feet.
2—Five–eighths coverage; layered cirriform clouds; bases below 24,000 feet; tops 36,000 feet.
3—Five–tenths coverage; stratocumulus clouds; base at 36,000 feet; tops above 45,000 feet.
4—Five layers; tops of highest layer at 36,000 feet.

6487. What significant weather condition is expected within area G on the HI LVL SIG PROG? (See Figure 22.)

1—Three cumulonimbus cells with average tops above 41,000 feet.
2—Three–tenths coverage; layered cirriform clouds; base at 41,000 feet.
3—Three–eighths cloud coverage; cumulonimbus; tops 41,000 feet; bases below 24,000 feet.
4—Three layers of cirrostratus; tops 41,000 feet; bases unknown.

6488. What significant weather is expected within area H on the HI LVL SIG PROG? (See Figure 22.)

1—Less than one–eighth coverage; cumulonimbus; bases below 24,000 feet; tops 43,000 feet.
2—Scattered cumuliform buildups; average tops above 43,000 feet.
3—Multi–layered cirriform clouds; average bases 43,000 feet.
4—Less than one–tenth coverage; cirriform clouds; bases at 43,000 feet.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350
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5 LYR
310
250
4 LYR
350
270
VT 1800Z (DATE)
HI LVL SIG WX PROG
400 - 70 MB

Figure 22

6489. The temperature of the air at the surface is 98° F and the dewpoint is 88° F. At approximately what altitude above the surface should you expect the base of cumuliform clouds?

1—1,500 feet.
2—2,500 feet.
3—5,000 feet.
4—6,000 feet.

6490. What is the significance of the "F2" in the Remarks portion of this SA?

ORF...SP -X E80 BKN 250 OVC 1GF 169/67/
672105/ 003/R05VV11/2 F2

1—Surface based obscuration is caused by fog and is 200 feet thick.
2—The restriction to visibility is caused by fog and the prevailing visibility is 2 statute miles.
3—Fog is obscuring two-tenths of the sky.
4—The partial obscuration is caused by fog and the visibility value is variable to 1-1/2 to 2 statute miles.

6491. Why does the wind have a tendency to follow the isobars above the friction level?

1—Isobars are lines connecting points of equal wind direction aloft.
2—The Coriolis force tends to counterbalance the horizontal pressure gradient.
3—The Coriolis force acts perpendicular to a line connecting the highs and lows.
4—The friction of the air with the earth deflects the air perpendicular to the pressure gradient.

6492. Within an unstable layer of air, clouds are cumuliform. The vertical extent of the clouds depends on the

1—depth of the unstable layer.
2—wind velocity.
3—barometric pressure at the surface.
4—barometric pressure at various levels.

6493. A field elevation is 1,800 feet at the station originating the following weather report. If the sky cover is one continuous layer, what is its thickness?

W8X1FK 174/74/73/0000/004/ OVC 40

1—2,200 feet.
2—3,000 feet.
3—1,400 feet.
4—4,000 feet.

6494. What conditions are necessary for the formation of thunderstorms?

1—Low pressure, high humidity, and cumulus clouds.
2—Lifting force, high temperature, and unstable lapse rate.
3—Lifting force, high humidity, and unstable lapse rate.
4—High humidity, high temperature, and cumulus clouds.

6495. Which weather phenomenon is always associated with the passage of a frontal system?

1—Inherent instability of the air being replaced.
2—An abrupt and sizable temperature change.
3—A change in wind direction.
4—Clouds, either ahead or behind the frontal system.

6496. What is an important characteristic of wind shear?

1—It is encountered most frequently near mountain waves during winter months.
2—It is an atmospheric condition that is associated exclusively with zones of convergence.
3—The Coriolis phenomenon in both high- and low-level air masses is the principal generating force.
4—It is an atmospheric condition that may be associated with a low-level temperature inversion, a jet stream, or a frontal zone.

6497. Which situation is most conducive to the formation of advection fog?

1—An air mass moving inland from the coast in wintertime.
2—Warm, moist air settling over a cool surface under no-wind conditions.
3—A light breeze blowing colder air out to sea.
4—A warm, moist air mass on the windward side of the mountains.

6498. The most frequent type of ground or surface based temperature inversion is that produced by

1—warm air being lifted rapidly aloft in the vicinity of mountainous terrain.
2—the movement of colder air under warm air, or the movement of warm air over cold air.
3—widespread sinking of air within a thick layer aloft resulting in heating by compression.
4—terrestrial radiation on a clear, relatively still night.

6499. A temperature inversion will form only

1—in stable air.
2—in unstable air.
3—when a stratiform layer merges with a cumuliform mass.
4—when stratus clouds form.

6500. Which of the following combinations of weather producing variables would likely result in cumuliform-type clouds, good visibility, showery rain, and possible clear-type icing in clouds?

1—Stable, moist air and orographic lifting.
2—Unstable, moist air and no lifting mechanism.
3—Stable, dry air and orographic lifting.
4—Unstable, moist air and orographic lifting.

6501. Steady precipitation, in contrast to showery, preceding a front is related to

1—stratiform clouds with little or no turbulence.
2—cumuliform clouds with little or no turbulence.
3—stratiform clouds with moderate turbulence.
4—cumuliform clouds with moderate turbulence.

6502. Under what condition is pressure altitude and density altitude the same value?

1—At standard temperature.
2—When the altimeter setting is 29.92.
3—When the altimeter has no installation error.
4—At sea level, when the temperature is 0° F.

6503. Which is a necessary condition for the occurrence of a low-level temperature inversion wind shear?

1—The temperature differential between the cold and warm air layers must be at least 10° C.
2—A calm or light wind near the surface and a relatively strong wind just above the inversion.
3—A wind direction difference of at least 30° between the wind near the surface and the wind just above the inversion.
4—Strong surface heating resulting in rapid expansional cooling.

6504. While maintaining FL310, you observe the OAT is 15° colder than standard. What is the relationship between true altitude and pressure altitude?

1—They are both the same, 31,000 feet.
2—True altitude is lower than 31,000 feet.
3—Pressure altitude is lower than true altitude.
4—It is impossible to determine the relationship.

6505. Which statement about low-level wind shear, as it relates to frontal activity, is correct?

1—The amount of wind shear in cold fronts is much greater than found in warm fronts.
2—With a warm front, the most critical period is before the front passes the airport.
3—With a cold front, the most critical period is just before the front passes the airport.
4—With a cold front, the problem ceases to exist after the front passes the airport.

6506. When flying in stratiform clouds where ice is forming on the aircraft, the pilot can likely alleviate the icing by changing to a flight level where the temperatures are not within which minimum range?

1— -2° C to -15° C.
2— 0° C to -15° C.
3— -2° C to -10° C.
4— 0° C to -10° C.

6507. The section of the area forecast entitled SIG CLDS AND WX contains a

1—summary of cloudiness and weather significant to flight operations broken down by states or other geographical areas.
2—summary of forecast sky cover, cloud tops, visibility, and obstructions to vision along specific routes.
3—statement of AIRMETS and SIGMETS still in effect at the time of issue.
4—summary of only those clouds and weather considered adverse to safe flight operations.

6508. What is the term used to describe streamers of precipitation trailing beneath clouds but evaporating before reaching the ground?

1—COL.
2—Dissipation trails.
3—Virga.
4—Foehn.

6509. On a cold, clear night ice crystals can form on a surface directly from water vapor. This process is known as

1—supersaturation.
2—supercooling.
3—evaporation.
4—sublimation.

6510. What type of clouds and coverage should a pilot expect within an area enclosed by large scalloped lines on a HI LVL SIG PROG Chart?

1—Continuous clouds of any type which constitute an overcast condition.
2—Any intensity (light to dense) cirriform clouds of overcast coverage only.
3—Cumulonimbus or cumuliform clouds of scattered to broken coverage.
4—Dense, continuous cirriform clouds of broken or overcast coverage.

6511. What is the significance of the "RB35" entered in the Remarks of the SA 191400 for MLC?

MLC...SP S SCT E18 OVC 7R 123/64/62/3307/992 RB35

1—Cloud tops of rain showers at 3,500 feet AGL determined by radiosonde balloon soundings.
2—Runway braking factor is 35 percent of dry runway surface due to light rain.
3—Runway arresting gear is inoperative on Rwy 35.
4—Rain began at 1335Z at MLC.

6512. If an unstable air mass is forced upward, what type clouds can be expected?

1—Air mass clouds with a temperature inversion.
2—Stratiform clouds with minimum vertical development.
3—Altostratus clouds with considerable associated turbulence.
4—Clouds with considerable vertical development and associated turbulence.

6513. Clouds are divided into four families according to their

1—origin.
2—outward shape.
3—height range.
4—composition.

6514. Which feature is normally associated with the "cumulus stage" of a thunderstorm?

1—Frequent lightning.
2—Beginning of rain at the surface.
3—Roll cloud.
4—Continuous updraft.

6515. If the outside air temperature at a given altitude is warmer than standard, the density altitude is

1—lower than pressure altitude, but approximately equal to the true altitude.
2—higher than true altitude, but lower than pressure altitude.
3—higher than the pressure altitude.
4—lower than true altitude.

6516. The term "dewpoint" refers to the temperature

1—at which fog will form.
2—spread between actual temperature and temperature during evaporation.
3—at which the evaporation and condensation points are equal.
4—to which air must be cooled to become saturated.

6517. What determines the type of structural icing that can form on the surface of an aircraft?

1—Temperature of the air and aircraft surface.
2—Size of the water droplets and the air temperature.
3—Percent of relative humidity and the outside air temperature.
4—Rate at which water freezes upon contact with the aircraft.

6518. A pilot planning an IFR flight is concerned about the hazard of icing. What sources reflect the most accurate information on current and forecast icing conditions?

1—Convective SIGMETS (WST), Freezing Level Chart, and RADATS.
2—Low Level Sig Weather Prog Chart, RADATS, and the Area Forecast.
3—PIREPS, Weather Depiction Chart, and the Freezing Level Chart.
4—PIREPS, AIRMETS, SIGMETS, and the Area Forecast.

6519. A ceiling is defined as the height of the

1—highest layer of clouds or obscuring phenomena aloft that covers over six-tenths of the sky.
2—lowest layer of clouds that contributed to the overall overcast.
3—lowest layer of clouds which is at least thin overcast.
4—lowest layer of clouds or obscuring phenomena aloft that is reported as broken or overcast.

6520. The Severe Weather Outlook Chart depicts

1—areas of probable severe thunderstorms by the use o hatching on the chart.
2—general direction of thunderstorm movement a indicated by the arrow.
3—areas of forecast severe or extreme turbulence an areas of severe icing for the next 24 hours.
4—areas of general (excluding severe) thunderstor activity by the use of hatching on the chart.

6521. Under what condition will true altitude be lowe than indicated altitude with an altimeter setting of 29.9 even with an accurate altimeter?

1—In warmer than standard air temperature.
2—In colder than standard air temperature.
3—When density altitude is higher than indicate altitude.
4—Under higher than standard pressure at standard ai temperature.

6522. What type altitude does a pilot maintain at FL210?

1—Indicated.
2—Pressure.
3—Density.
4—Corrected (approximately true).

6523. What weather phenomenon is implied within a area enclosed by small scalloped lines on a HI LVL SI PROG Chart?

1—Cumulonimbus clouds, icing, and moderate or greate turbulence.
2—Cirriform clouds, light to moderate turbulence, an icing.
3—Cirrocumulus clouds, moderate turbulence; no icin unless specifically indicated.
4—Cumuliform or standing lenticular clouds, moderate t severe turbulence, and icing.

6524. The possibility of carburetor icing should always b considered when operating in conditions where the

1—temperature is as high as 95° F and the relativ humidity is 30 percent or greater.
2—relative humidity range is from 25 percent t 100 percent, regardless of temperature.
3—relative humidity is between 30 percent an 50 percent and the temperature is between 0° F an 32° F.
4—temperature is as high as 70° F and the relativ humidity is greater than 50 percent.

6525. What determines the structure or type of clouds which will form as a result of air being forced to ascend?

1—The amount of condensation nuclei present afte lifting occurs.
2—The method by which the air is lifted.
3—The relative humidity of the air after lifting occurs.
4—The stability of the air before lifting occurs.

6526. The absence of the sky condition and visibility on ATIS signifies that

1—the ceiling is above 5,000 feet and the visibility is more than 5 miles.
2—sky condition is clear and visibility is unlimited.
3—weather conditions have not been measured within the past 1 hour.
4—conditions are changing rapidly and the pilot is expected to contact the tower for the latest report.

6527. The Severe Weather Outlook Chart (Figure 23), is a preliminary 24–hour outlook presented in two panels. In addition to the information portrayed, the chart may also depict

1—areas of severe icing.
2—severe low–level wind shear areas.
3—a squall line symbol and expected time of development.
4—hurricane watch areas.

6528. The Severe Weather Outlook Chart (Figure 23), which is used primarily for advance planning, provides what information?

1—An 18–hour categorical outlook with a 48–hour valid time for severe weather watch, thunderstorm lines, and areas of expected tornado activity.
2—A preliminary 12–hour outlook for severe thunderstorm activity and probable convective turbulence.
3—A preliminary 24–hour severe weather outlook for general and severe thunderstorm activity, tornadoes, watch areas, and may include a squall line symbol.
4—A 12–hour categorical outlook with a 24–hour valid time for severe convective activity, severe weather outlook, including areas of thunderstorms, tornadoes, or hurricanes.

6529. What is the significance of the "LE30" entry in the Remarks of this SA report for HAR?

HAR...M3 OVC 2R–F 128/62/62/0000/005/LE30

1—Leading edge of warm front is 30 miles east of station.
2—Drizzle ended at 1030Z.
3—Lightning has been observed approximately 30 miles to the east.
4—Drizzle is expected to end 30 minutes past the hour.

6530. The station originating the following weather report has a field elevation of 3,500 feet MSL. If the sky cover is one continuous layer, what is its thickness?

M5 OVC 1/2HK 173/72/73/0000/002/OVC 75

1—7,000 feet.
2—4,000 feet.
3—3,500 feet.
4—2,500 feet.

6531. Moisture is added to air by two processes. These are

1—supersaturation and evaporation.
2—heating and condensation.
3—evaporation and sublimation.
4—sublimation and heating.

6532. Hazardous wind shear is commonly encountered near the ground

1—near thunderstorms and during periods when the wind velocity is stronger than 35 knots.
2—during periods when the wind velocity is stronger than 35 knots and near mountain valleys.
3—during periods of strong temperature inversion and near thunderstorms.
4—near mountain valleys and on the windward side of a hill or mountain.

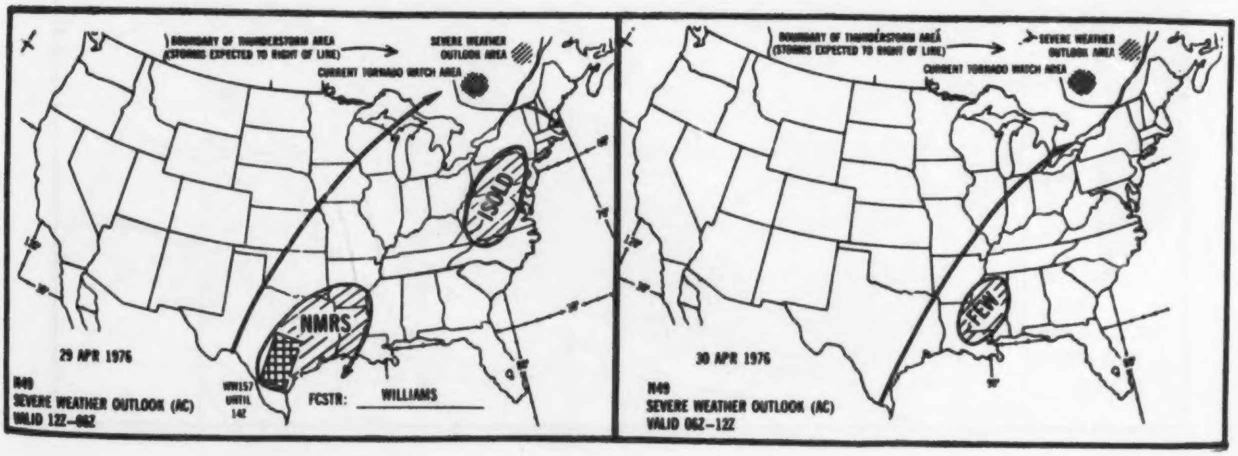

BOUNDARY OF THUNDERSTORM AREA (STORMS EXPECTED TO RIGHT OF LINE)
SEVERE WEATHER OUTLOOK AREA
CURRENT TORNADO WATCH AREA
ISOLD
NMRS
29 APR 1976
N49
SEVERE WEATHER OUTLOOK (AC)
VALID 12Z–06Z
WW157 UNTIL 14Z
FCSTR: WILLIAMS
BOUNDARY OF THUNDERSTORM AREA (STORMS EXPECTED TO RIGHT OF LINE)
SEVERE WEATHER OUTLOOK AREA
CURRENT TORNADO WATCH AREA
FEW
30 APR 1976
N49
SEVERE WEATHER OUTLOOK (AC)
VALID 06Z–12Z

Figure 23

6533. What is the windspeed at the station plot indicated by Arrow A? (See Figure 24.)

1—55 knots.
2—30 knots.
3—65 knots.
4—40 knots.

6534. What is the significance of the clear area (Arrow B) which lies within the hatched area? (See Figure 24.)

1—The windspeeds within the clear area range from 70 to 100 knots.
2—The clear area indicates the location of the core of the jet stream.
3—Windspeeds within the clear area average more than 150 knots.
4—Windspeeds within the clear area are 110 to 150 knots.

6535. The station plot shown by Arrow C, Figure 24, indicates a windspeed of

1—130 knots.
2—80 knots.
3—60 knots.
4—40 knots.

6536. The station originating the following weather repor has a field elevation of 1,800 feet MSL. If the sky cover i one continuous layer, what is its thickness?

W8 X 1FK 174/74/73/0000/004/OVC 35

1—800 feet.
2—1,700 feet.
3—2,500 feet.
4—2,700 feet.

6537. Which type jet stream can be expected to cause the greater turbulence?

1—A straight jet stream associated with a low-pressur trough.
2—A jet stream associated with a wide isotherm spacing.
3—A curving jet stream associated with a deep low-pressure trough.
4—A jet stream occurring during the summer at the lowe latitudes.

6538. Frontal activity can produce fogs which are a resul of

1—adiabatic cooling.
2—nocturnal cooling.
3—evaporation of surface moisture.
4—evaporation of precipitation.

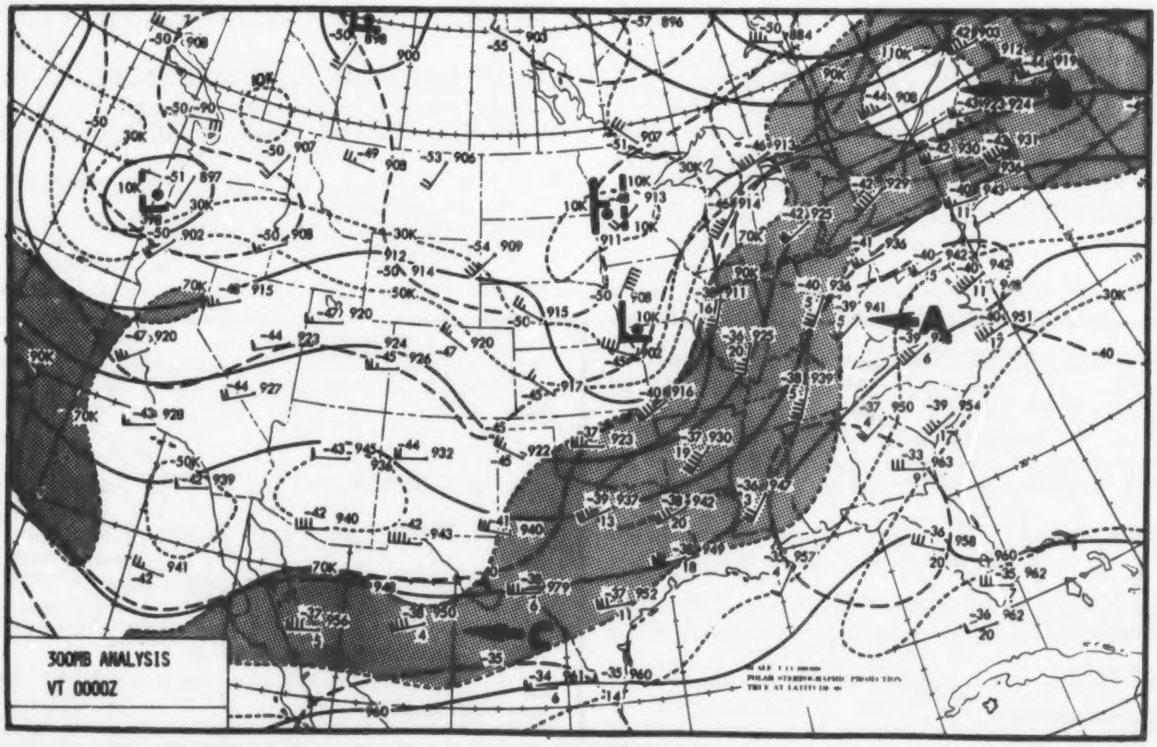


Figure 24

6539. What is the approximate wind direction and velocity at CYYQ? (See Figure 25, Arrow B.)

1—320°/70 knots.
2—220°/60 knots.
3—310°/80 knots.
4—270°/50 knots.

6540. What is the approximate wind direction and velocity at CYEG? (See Figure 25, Arrow C.)

1—270°/100 knots.
2—240°/110 knots.
3—230°/80 knots.
4—300°/70 knots.

6541. What is the approximate wind direction and velocity at KACK? (See Figure 25, Arrow D.)

1—260°/30 knots.
2—320°/45 knots.
3—240°/60 knots.
4—360°/30 knots.

6542. What is the approximate wind direction and velocity at KIAH? (See Figure 25, Arrow E.)

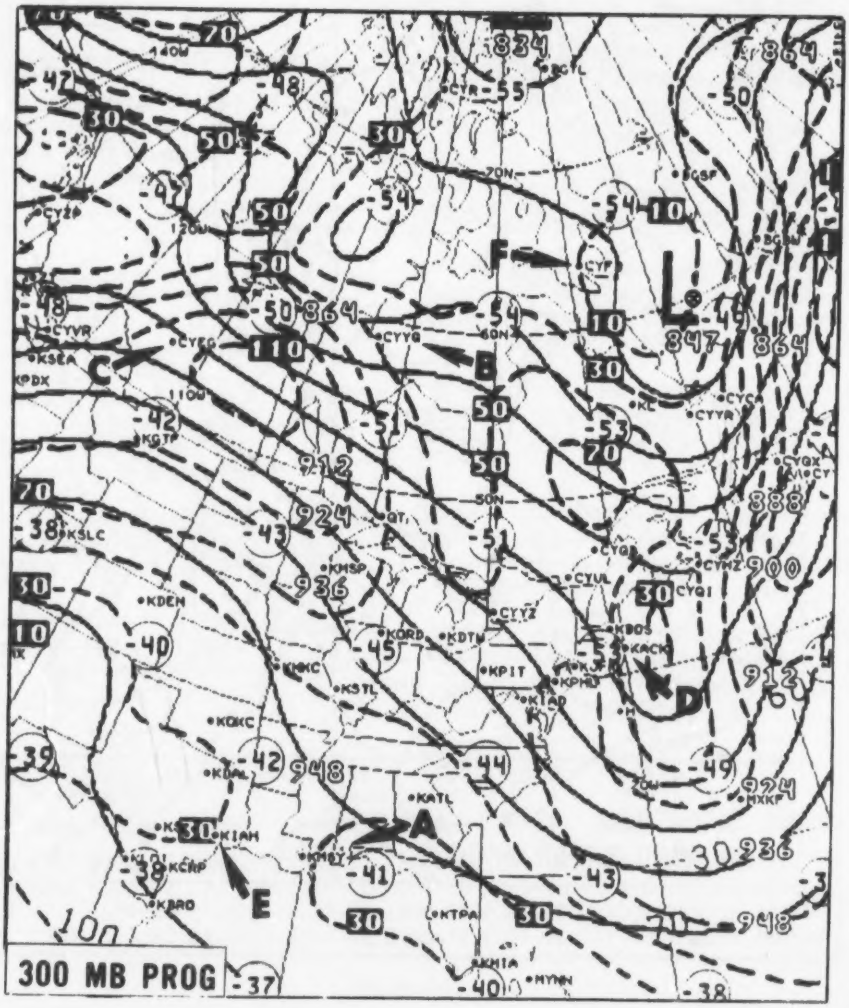
1—270°/30 knots.
2—320°/30 knots.
3—350°/40 knots.
4—250°/50 knots.

6543. What is the approximate wind direction and velocity at CYFB? (See Figure 25, Arrow F.)

1—360°/50 knots.
2—270°/30 knots.
3—240°/20 knots.
4—330°/10 knots.

6544. What determines the amount of water vapor air can hold?

1—Relative humidity.
2—Temperature of the air.
3—Stability of the air.
4—Temperature/dewpoint spread.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CYFB
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CYYZ
CYMZ
CYQX
MYNN
MXKF
40N
30N
20N
30N

Figure 25

6545. The symbol F300 on the TROP WIND SHEAR PROG represents the (see Figure 26, Arrow A)

1—height of the tropopause in millibars (300 mbar).
2—wind direction at the tropopause (300°).
3—flight level of the tropopause.
4—height of maximum wind shear (30,000 feet).

6546. The symbol -59 on the TROP WIND SHEAR PROG represents the (see Figure 26, Arrow B)

1—tropopause temperature.
2—300-millibar level temperature.
3—150-millibar level temperature.
4—temperature at 34,000 feet.

6547. The symbol -68 on the TROP WIND SHEAR PROG represents the (see Figure 26, Arrow C)

1—300-millibar level temperature.
2—tropopause temperature.
3—150-millibar level temperature.
4—temperature at 30,000 feet.

6548. The symbol 4 on the TROP WIND SHEAR PROG represents the (see Figure 26, Arrow D)

1—temperature lapse rate of 4° per 1,000 feet.
2—wind shear in knots per thousand feet.
3—temperature drop at the tropopause.
4—maximum wind shear at FL340.

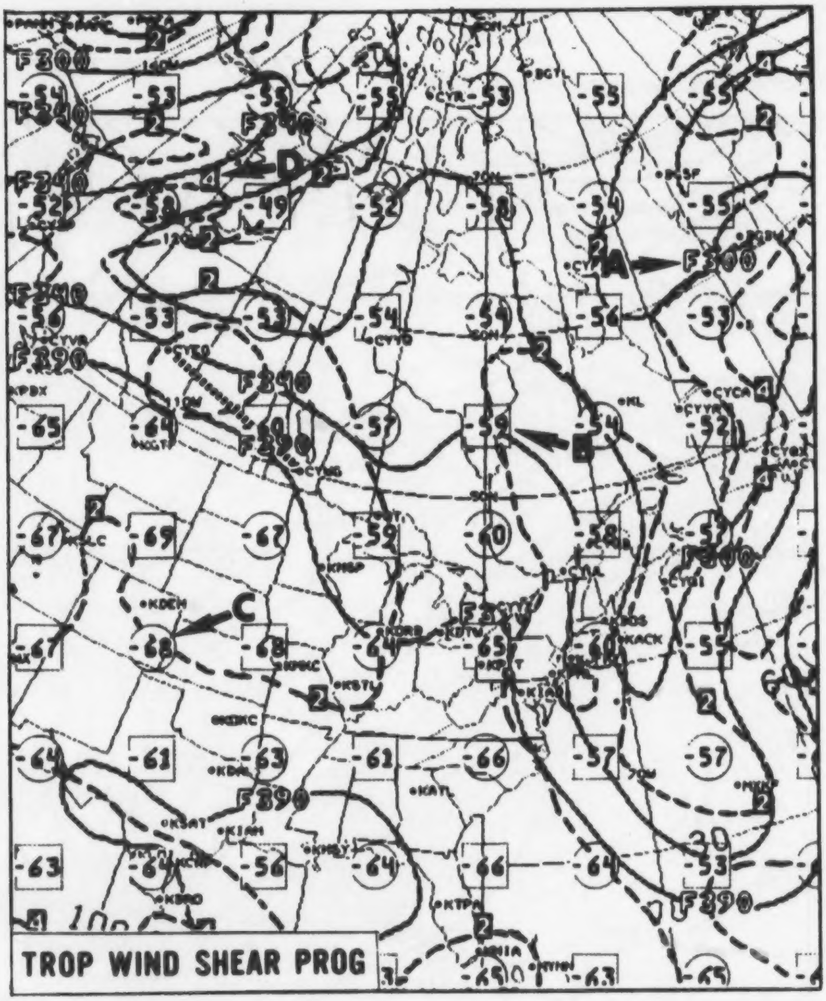

Figure 26

6549. Which of the following is true concerning the troposphere?

1—It contains all the free oxygen of the atmosphere.
2—It is the dividing line between the stratosphere and the atmosphere.
3—It is thicker over the equator than over the poles.
4—It extends to a uniform height at all latitudes.

6550. In general terms, what is the migration pattern and strength of the jet stream during the winter months in the mid-latitudes?

1—Shifts toward the north and speed increases.
2—Shifts toward the south and speed increases.
3—Shifts toward the north and speed decreases.
4—Shifts toward the south and speed decreases.

6551. Which feature is associated with the tropopause?

1—Absence of wind and turbulent conditions.
2—Absolute upper limit of cloud formation.
3—Abrupt change in temperature lapse rate.
4—Constant height above the Earth.

6552. A most likely location of clear air turbulence is

1—in an upper trough on the polar side of a jet stream.
2—near a ridge aloft on the equatorial side of a high-pressure flow.
3—downstream of the equatorial side of a jet stream.
4—south of an east/west oriented high-pressure ridge in its dissipating stage.

6553. What flight planning information can a pilot derive from constant pressure charts?

1—Clear air turbulence and icing conditions.
2—Levels of widespread cloud coverage.
3—Winds and temperatures aloft.
4—Frontal systems and obstructions to vision aloft.

6554. A strong wind shear can be expected

1—on the low-pressure side of a jet stream core where the speed at the core is stronger than 110 knots.
2—in the jet stream front above a core having a speed of 60 to 90 knots.
3—where the 20-knot isotachs are spaced 100 nautical miles or closer together.
4—if the 5° C isotherms are spaced between 7° to 10° of latitude.

6555. Which element is most responsible for "driving the atmosphere in its endless motion"?

1—The movement of air.
2—Pressure differential.
3—Temperature variation.
4—Relative humidity.

6556. Interpret the PIREP (Pilot Weather Report).

UA/OV 20S ATL 1620 FL050/TP BE18/IC MDT RIME ICE

1—20 nautical miles south of Atlanta at 1620Z, a pilot flying at 5,000 feet in a Beech 18 reported moderate rime ice.
2—20 minutes after the hour snow began at Atlanta, wind 160° at 20 knots; a Beech 18 reported moderate rime ice at 5,000 feet.
3—Snow encountered at 2,000 feet over Atlanta at 1620Z; a Beech 18 encountered rime ice at 5,000 feet.
4—20 minutes after the hour, south of Atlanta, wind was reported from 160° at 20 knots; moderate rime icing began 18 minutes after the hour at 5,000 feet.

6557. What approximate wind direction, speed, and temperature (relative to ISA) should a pilot expect when planning for a flight over EMI at FL270? (See Figure 27 and Appendix 2, page 14.)

1—265° true; 100 knots; ISA +3° C.
2—270° true; 110 knots; ISA +5° C.
3—260° magnetic; 100 knots; ISA -5° C.
4—270° magnetic; 115 knots; ISA -3° C.

6558. What approximate wind direction, speed, and temperature (relative to ISA) should a pilot expect when planning for a flight over ALB at FL270? (See Figure 27 and Appendix 2, page 14.)

1—270° magnetic at 97 knots; ISA -4° C.
2—260° true at 110 knots; ISA +5° C.
3—275° true at 97 knots; ISA +4° C.
4—260° magnetic at 103 knots; ISA -5° C.

6559. What approximate wind direction, speed, and temperature (relative to ISA) should a pilot expect when planning for a flight over PSB at FL270? (See Figure 27 and Appendix 2, page 14.)

1—260° magnetic at 93 knots; ISA +7° C.
2—270° true at 105 knots; ISA +5° C.
3—280° true at 113 knots; ISA +3° C.
4—255° true at 93 knots; ISA +6° C.

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VALID 141200Z  FOR USE 0900-1500Z.  TEMPS NEG ABV 24000

FT  3000  6000    9000     12000    18000    24000    30000  34000  39000

EMI 2807 2715-07 2728-10 2842-13 2867-21 2891-30 751041 771150 780855
ALB 0210 9900-07 2714-09 2728-12 2656-19 2777-28 781842 760150 269658
PSB      1509+04 2119+01 2233-04 2262-14 2368-26 781939 760850 780456
STL 2308 2613+02 2422-03 2431-08 2446-19 2461-30 760142 782650 760559
```

Figure 27

6560. Which induction system ice prevention procedure is recommended before takeoff when carburetor icing may be anticipated?

1—Taxi with the carburetor heat ON; return to COLD for takeoff.
2—Apply carburetor heat briefly immediately before takeoff; return to COLD for takeoff.
3—Place the carburetor heat control halfway between the ON and COLD position for takeoff.
4—Take off and climb with the carburetor heat in the ON position.

6561. The average altitude for one-half atmosphere (500 millibar pressure level) is

1—18,000 feet.
2—13,000 feet.
3—10,000 feet.
4—25,000 feet.

6562. Which of the following is true concerning the tropopause?

1—The polar tropopause is at a higher altitude than the tropical tropopause.
2—The tropopause is the dividing line between the atmosphere and the stratosphere.
3—The tropopause is higher in the summer than in the winter.
4—Above the tropopause, the oxygen content of the air drops to approximately 2 percent.

6563. A pilot is entering an area where significant clear air turbulence has been reported. Which action is appropriate upon encountering the first ripple?

1—Extend flaps to decrease wing loading.
2—Extend gear to provide more drag and increase stability.
3—Enter a shallow climb or descent at maneuvering speed (V_A).
4—Adjust airspeed to that recommended for rough air.

6564. Where do the maximum winds associated with the jet stream usually occur?

1—On the equatorial side of the jet core during the summer season.
2—In the vicinity of breaks in the tropopause on the polar side of the jet core.
3—Below the jet core where a long straight stretch of the jet stream is located.
4—On the equatorial side of the jet side of the jet stream where moisture has formed cirriform clouds.

6565. When advection fog has developed, what may tend to dissipate or lift this fog into low stratus clouds?

1—Temperature inversion.
2—Nighttime cooling.
3—Wind stronger than 15 knots.
4—Surface radiation.

6566. Where did the BE55 encounter icing conditions? (See Figure 28.)

1—Over MRB VOR at 8,000 feet.
2—On a flight from MRB to PIT at 8,000 feet.
3—Over MRB VOR from 3,500 to 6,000 feet.
4—On a flight from MRB to PIT between 3,500 to 6,000 feet.

6567. What is the cloud condition reported by the BE55? (See Figure 28.)

1—Broken 12,000 to 22,000 variable broken overcast.
2—400 feet broken, tops 1,200 feet; second layer base 2,200 feet broken variable overcast.
3—Sky obscured; 400 feet broken with tops 1,200 to 2,200 feet broken variable overcast.
4—Scattered 400 feet; second layer broken, 1,200 feet; third layer 2,200 feet broken variable overcast.

PIREP

UA/OV MRB-PIT 1600 FL080/TP BE55/SK 004 BKN
012/022 BKN-OVC/TA 01/IC LGT-MDT RIME
035-060/RM WIND COMP HEAD 020 MH310 TAS 180

Figure 28

6568. Ice pellets encountered during flight always indicate that

1—a cold front has passed.
2—there are thunderstorms in the area.
3—there is freezing rain at higher altitudes.
4—you can climb to a higher altitude without encountering more than light icing.

6569. Frontal waves normally form on

1—slow moving cold fronts or stationary fronts.
2—slow moving warm fronts or occluded fronts.
3—rapidly moving cold fronts or warm fronts.
4—stationary or occluded fronts.

6570. The localities in which radiation fog would most likely occur are

1—lakes and rivers.
2—coastal areas.
3—level inland areas.
4—mountain slopes.

6571. What is the density altitude at an airport where the field elevation is 344 feet, the altimeter setting is 30.20, and the temperature is +64° F? (See Appendix 3, page 28.)

1—450 feet.
2—1,550 feet.
3—2,000 feet.
4—2,500 feet.

6572. What is the density altitude at an airport where the field elevation is 915 feet, the altimeter setting is 30.10, and the temperature is +71° F? (See Appendix 3, page 28.)

1—900 feet.
2—1,050 feet.
3—1,250 feet.
4—1,700 feet.

6573. What is the density altitude at an airport where the field elevation is 5,400 feet, the altimeter setting is 30.30, and the temperature is +85° F? (See Appendix 3, page 28.)

1—7,800 feet.
2—7,000 feet.
3—6,700 feet.
4—5,000 feet.

6574. What is the density altitude for a sea level airport if the OAT is +85° F and the altimeter setting is 29.80 inches Hg? (See Appendix 3, page 28.)

1—1,600 feet.
2—1,800 feet.
3—2,300 feet.
4—2,500 feet.

6575. ABC has a field elevation of 4,158 feet. What is the density altitude? (See Appendix 3, page 28.)

ABC 50 SCT E80 BKN 15 067/89/59/1503/985

1—1,200 feet.
2—4,200 feet.
3—5,100 feet.
4—7,100 feet.

6576. The critical engine on most light twin-engine airplanes with clockwise rotating propellers, is the

1—right engine, because of the additional force created by the "P-factor" of the right propeller.
2—left engine, because of the additional force created by the "P-factor" of the left propeller.
3—right engine, because of the additional force created by the "P-factor" of the left propeller.
4—left engine, because of the additional force created by the "P-factor" of the right propeller.

6577. If an engine failure occurs at an altitude above single-engine ceiling, what airspeed should be maintained to conserve altitude as long as possible to reach a suitable landing area?

1—V_{MC}.
2—V_{YSE}.
3—V_{XSE}.
4—V_A.

6578. When operating a light twin-engine airplane at V_{MC} the pilot should expect performance to be sufficient to maintain

1—heading.
2—heading and altitude.
3—heading, altitude, and be able to climb at 50 ft./min.
4—altitude.

6579. In a multiengine airplane with engines which rotate clockwise, the "critical" engine is the

1—left engine, because the right engine center of thrust is further away from the centerline of the fuselage.
2—left engine, because the right engine center of thrust is closer to the centerline of the fuselage.
3—right engine, because the left engine center of thrust is further away from the centerline of the fuselage.
4—right engine, because the left engine center of thrust is closer to the centerline of the fuselage.

6580. Which condition causes V_{MC} to be the highest?

1—CG is at the most forward allowable position.
2—CG is at the most rearward allowable position.
3—Gross weight is at the maximum allowable value.
4—Outboard fuel tanks are full and inboard fuel tanks are empty.

6581. What action should be taken if one engine of a light twin-engine airplane becomes inoperative during takeoff?

1—If at or above V_1, the takeoff may be continued, unless enough runway remains to allow stopping safely.
2—If still on the runway at or above V_{MC} the airplane may be accelerated to V_{XSE} to assure controllability after lift-off.
3—If power loss occurs before lift-off, close both throttles and stay on the ground regardless of the amount of runway remaining.
4—If power loss occurs before lift-off, close both throttles and stay on the ground if sufficient runway remains to stop on the runway, otherwise continue takeoff.

6582. When one engine fails on a twin-engine airplane, the resulting performance loss

1—is approximately 50 percent since 50 percent of the normally available thrust is lost.
2—causes the airplane to become uncontrollable, unless power output of the operating engine is reduced.
3—may reduce the rate of climb by 50 percent or more.
4—reduces cruise indicated airspeed by 50 percent or more.

6583. What is the significance of the blue radial line on the airspeed indicator of a light twin–engine airplane and when is it to be used?

1—It indicates the speed which will provide the maximum altitude gain in a given time when one engine is inoperative and should be used for climb and final approach during engine–out operations.
2—It indicates the speed which will provide the greatest height for a given distance of forward travel when one engine is inoperative and should be used for all climbs during engine–out operation.
3—It indicates the minimum speed at which the airplane is controllable when the critical engine is suddenly made inoperative and should be used at all altitudes when an engine is inoperative.
4—It indicates the minimum safe single–engine speed and should be used during both normal and engine–out operations.

6584. For an airplane with unsupercharged reciprocating engines, V_{MC}

1—increases with altitude.
2—decreases with altitude.
3—is not affected by altitude.
4—increases or decreases directly with temperature changes.

6585. On a twin–engine airplane, where the propellers rotate in the same direction, why is the loss of power on one engine more critical than the loss of power on the other engine?

1—Resistance to torque from one engine imposes a greater load on one wing, thereby increasing the stalling speed of that wing.
2—The asymmetric propeller thrust or "P–factor," results in the center of thrust from one engine being further from the airplane centerline than the center of thrust from the other engine.
3—Because the "corkscrew" pattern of airflow from one propeller is less effective against the airflow from the "critical" engine.
4—The torque reaction from operation of the critical engine is more severe around the vertical as well as the longitudinal axis.

6586. Which of the following would cause an increase in V_{MC}?

1—An increase in weight.
2—Moving the CG forward.
3—Banking toward the inoperative engine.
4—An increase in altitude.

6587. On a twin–engine airplane, if one engine fails immediately after lift–off and runway remaining is insufficient for normal landing, what action should be taken?

1—If airspeed has decreased to less than V_{MC}, reduce power on the operating engine as required to maintain directional control.
2—If airspeed has decreased to less than V_{MC}, maintain the pitch attitude that will provide level flight. After accelerating to V_{XSE}, resume climb.
3—Bank the airplane toward the operative engine and apply sufficient rudder pressure to keep the ball centered to get maximum climb performance.
4—Apply enough rudder pressure to keep the ball centered and enough opposite aileron to keep the wings level to get maximum climb performance.

6588. When an engine fails after takeoff, which of the following techniques will provide the best climb performance?

1—Wings level and the ball centered.
2—Wings banked approximately 5° toward the operating engine and the ball centered.
3—Wings banked approximately 5° toward the inoperative engine and the ball centered until landing gear and wing flaps are retracted.
4—Wings banked approximately 5° toward the operating engine and the ball displaced from center toward the operating engine, a distance approximately equal to the diameter of the ball.

6589. Which of the following statements is true regardin the operation of a twin–engine airplane with one engin inoperative?

1—Banking toward the operating engine increases V_{MC}.
2—Banking toward the inoperative engine increases V_{MC}
3—V_{MC} is a designed performance factor which must b proven during type certification and will not change a long as the ball is centered with appropriate rudde pressure.
4—Loss of directional control is not likely to occur a long as adequate rudder pressure is applied to kee the ball centered.

6590. If the tower–reported surface wind is 020° at 18 knots, what is the crosswind component for a Rwy 13 landing? (See Figure 29.)

1—24 knots.
2—21 knots.
3—17 knots.
4—13 knots.

6591. Which wind would exceed a crosswind limitation of 25 knots for a Rwy 1 takeoff? (See Figure 29.)

1—37 knots; 050°.
2—26 knots; 080°.
3—25 knots; 110°.
4—30 knots; 070°.

6592. The ATIS–reported wind is 180° at 25 knots. What is the crosswind component for Rwy 13 landing? (See Figure 29.)

1—25 knots
2—22 knots.
3—21 knots.
4—19 knots.

6593. What is the headwind component for a Rwy 13 takeoff if the surface wind is 190° at 15 knots? (See Figure 29.)

1—20 knots.
2—15 knots.
3—13 knots.
4—7 knots.

6594. If the tower–reported wind is 010° at 18 knots, what is the headwind component for Rwy 8 departure? (See Figure 29.)

1—7 knots.
2—15 knots.
3—17 knots.
4—21 knots.

6595. Which wind would not exceed the crosswind limitation of 20 knots for a Rwy 27 takeoff? (See Figure 29.)

1—24 knots; 340°.
2—25 knots; 325°.
3—25 knots; 320°.
4—29 knots; 315°.

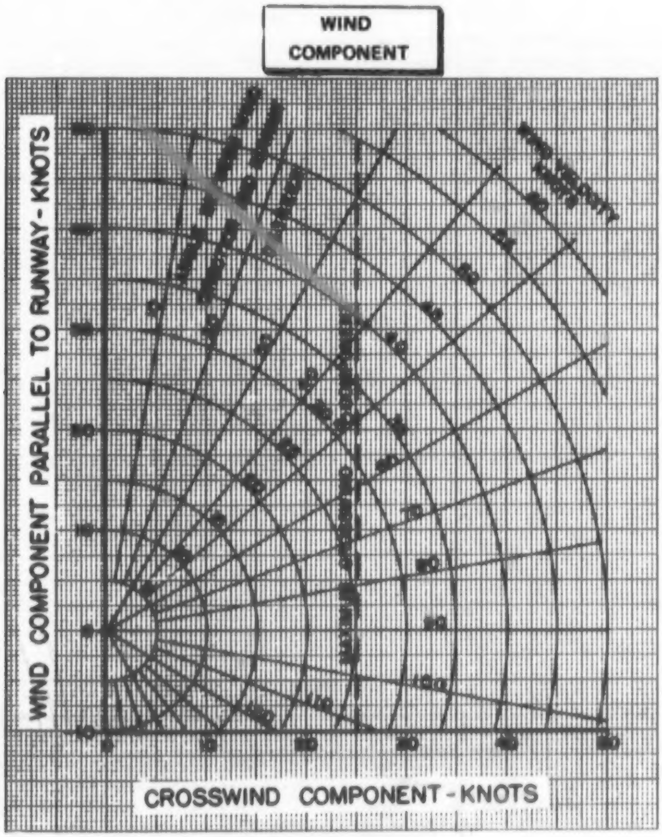


Figure 29

Table 1

Operating Conditions	A -1	A -2	A -3	A-4	A-5
Airplane gross weight	9,000	9,000	8,400	8,100	8,300
Landing gear position	UP	DOWN	UP	DOWN	DOWN
Wing flap position	UP	DOWN	UP	DOWN	DOWN
(Percent if DOWN)	----	30%	----	30%	30%
Engine power	OFF	OFF	OFF	OFF	OFF

6596. What is the stall speed for Operating Conditions A–1, Table 1? (See Figure 30.)

1—97 KIAS.
2—95 KIAS.
3—91 KIAS.
4—84 KCAS.

6597. What is the stall speed for Operating Conditions A–2, Table 1? (See Figure 30.)

1—91 KIAS.
2—84 KIAS.
3—81 KIAS.
4—80 KCAS.

6598. What is the stall speed for Operating Conditions A–3, Table 1? (See Figure 30.)

1—88 KCAS.
2—90 KIAS.
3—88 KIAS.
4—68 KIAS.

6599. What is the stall speed for Operating Conditions A–4, Table 1? (See Figure 30.)

1—94 KIAS.
2—83 KCAS.
3—75 KIAS.
4—72 KCAS.

6600. What is the stall speed for Operating Conditions A–5, Table 1? (See Figure 30.)

1—98 KIAS.
2—85 KCAS.
3—81 KIAS.
4—76 KIAS.

6601. What is the stall speed for Operating Conditions A Table 2? (See Figure 30.)

1—74 KIAS.
2—74 KCAS.
3—78 KIAS.
4—94 KIAS.

6602. What is the stall speed for Operating Conditions A Table 2? (See Figure 30.)

1—97 KCAS.
2—98 KIAS.
3—96 KIAS.
4—93 KIAS.

6603. What is the stall speed for Operating Conditions A Table 2? (See Figure 30.)

1—89 KCAS.
2—84 KCAS.
3—78 KIAS.
4—68 KIAS.

6604. What is the stall speed for Operating Conditions Table 2? (See Figure 30.)

1—80 KCAS.
2—84 KIAS.
3—82 KIAS.
4—86 KCAS.

6605. What is the stall speed for Operating Conditions A Table 2? (See Figure 30.)

1—72 KIAS.
2—84 KCAS.
3—90 KIAS.
4—94 KCAS.

Table 2

Operating Conditions	A-6	A-7	A-8	A-9	A-10
Airplane gross weight	8,000	9,300	8,200	9,100	8,600
Landing gear position	DOWN	UP	UP	DOWN	UP
Wing flap position	DOWN	UP	UP	DOWN	UP
(Percent if DOWN)	30%	----	----	30%	----
Engine power	OFF	OFF	OFF	OFF	OFF

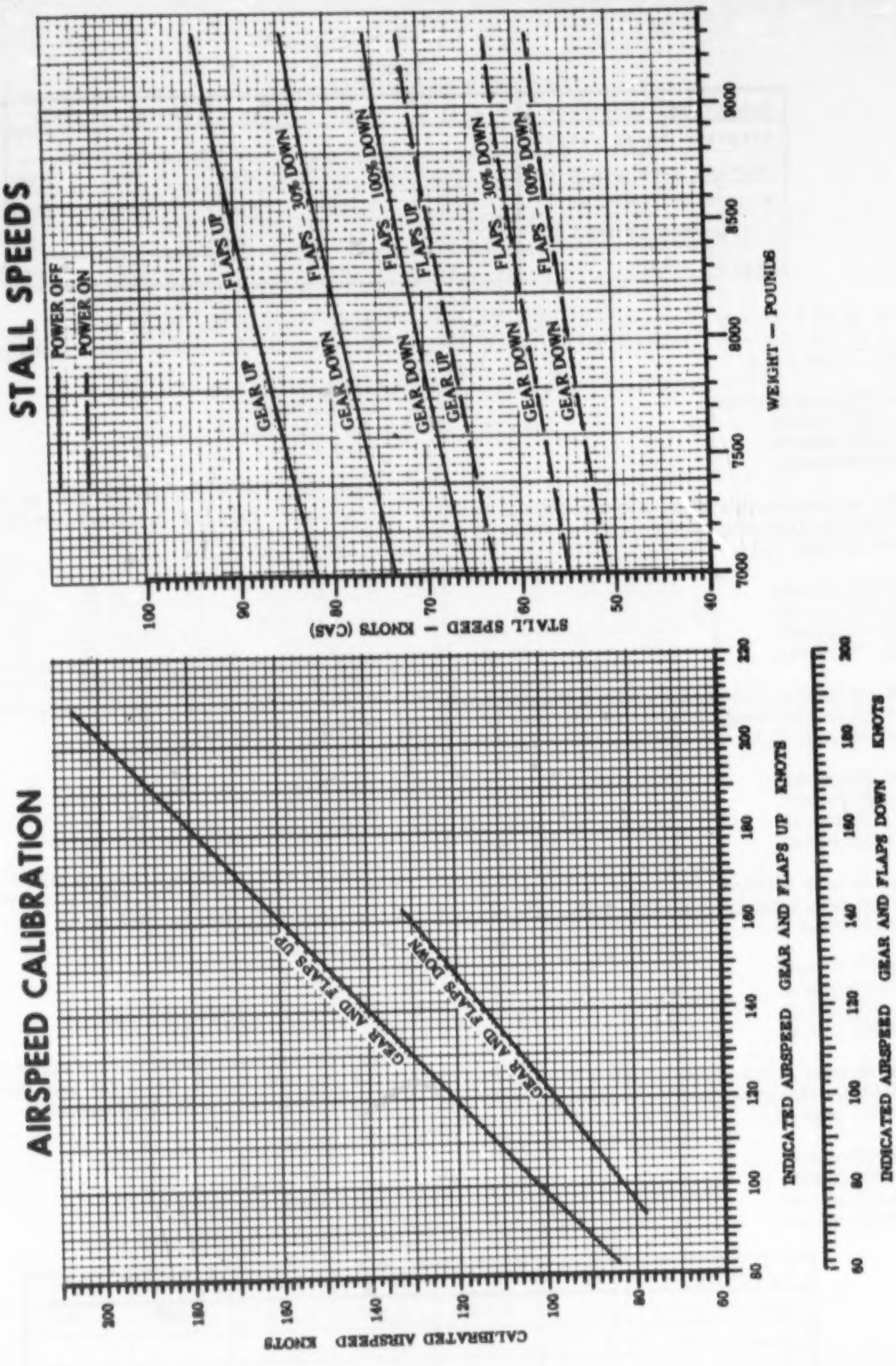

STALL SPEEDS
POWER OFF
POWER ON
GEAR UP
FLAPS UP
GEAR DOWN
FLAPS – 30% DOWN
GEAR DOWN
FLAPS – 100% DOWN
GEAR UP
FLAPS UP
GEAR DOWN
FLAPS – 30% DOWN
GEAR DOWN
FLAPS – 100% DOWN
STALL SPEED – KNOTS (CAS)
100
90
80
70
60
50
40
7000
7500
8000
8500
9000
WEIGHT – POUNDS
AIRSPEED CALIBRATION
GEAR AND FLAPS UP
GEAR AND FLAPS DOWN
CALIBRATED AIRSPEED KNOTS
200
180
160
140
120
100
80
60
80
100
120
140
160
180
200
220
INDICATED AIRSPEED GEAR AND FLAPS UP KNOTS
60
80
100
120
140
160
180
200
INDICATED AIRSPEED GEAR AND FLAPS DOWN KNOTS

Figure 30

Table 3

Operating Conditions	A-11	A-12	A-13	A-14	A-15
Airplane gross weight					
Landing gear position	DOWN	UP	DOWN	UP	DOWN
Wing flap position	DOWN	UP	DOWN	UP	DOWN
(Percent if DOWN)	30%	----	30%	----	30%
Engine power	OFF	OFF	OFF	OFF	OFF

6606. At what airplane gross weight is the stall speed 75 KIAS for Operating Conditions A-11, Table 3? (See Figure 30, page 71.)

1—7,000 pounds or below.
2—7,850 pounds.
3—8,100 pounds.
4—8,500 pounds.

6607. At what airplane gross weight is the stall speed 86 KIAS for Operating Conditions A-12, Table 3? (See Figure 30, page 71.)

1—7,200 pounds.
2—7,900 pounds.
3—8,400 pounds.
4—8,100 pounds.

6608. At what airplane gross weight is the stall speed 82 KIAS for Operating Conditions A-13, Table 3? (See Figure 30, page 71.)

1—8,650 pounds.
2—8,900 pounds.
3—9,000 pounds.
4—9,100 pounds.

6609. At what airplane gross weight is the stall speed 90 KIAS for Operating Conditions A-14, Table 3? (See Figure 30, page 71.)

1—8,300 pounds.
2—8,600 pounds.
3—8,800 pounds.
4—9,000 pounds.

6610. At what airplane gross weight is the stall speed 80 KIAS for Operating Conditions A-15, Table 3? (See Figure 30, page 71.)

1—8,100 pounds.
2—8,200 pounds.
3—8,500 pounds.
4—8,800 pounds.

6611. What is the accelerate and stop distance fo Operating Conditions B-1, Table 4? (See Figure 31.)

1—2,850 feet.
2—3,100 feet.
3—3,300 feet.
4—3,450 feet.

6612. What is the accelerate and stop distance fo Operating Conditions B-2, Table 4? (See Figure 31.)

1—2,900 feet.
2—3,150 feet.
3—3,300 feet.
4—3,450 feet.

6613. What is the decrease in the accelerate and sto distance if the headwind component increases from 5 knots to 20 knots using Operating Conditions B-3 Table 4? (See Figure 31.)

1—350 feet.
2—600 feet.
3—750 feet.
4—875 feet.

6614. At what temperature can you expect the accelerat and stop distance to be 3,600 feet using Operatin Conditions B-4, Table 4? (See Figure 31.)

1— +38° C.
2— +32° C.
3— +26° C.
4— +23° C.

6615. At what temperature can you expect the accelerat and stop distance to be 4,000 feet using Operatin Conditions B-5, Table 4? (See Figure 31.)

1— +12° C.
2— +17° C.
3— +22° C.
4— +26° C.

Table 4

Operating Conditions	B-1	B-2	B-3	B-4	B-5
Airport press. alt.	4,000'	1,000'	5,000'	2,000'	4,000'
Temperature (°C)	+10°C.	+10°C.	+20°C.		
Takeoff gross weight	8,000	9,000	9,300	8,600	8,800
Headwind component	15 knots	15 knots	5 knots	10 knots	CALM
Tailwind component	----	----	----	----	----

ACCELERATE AND STOP DISTANCE

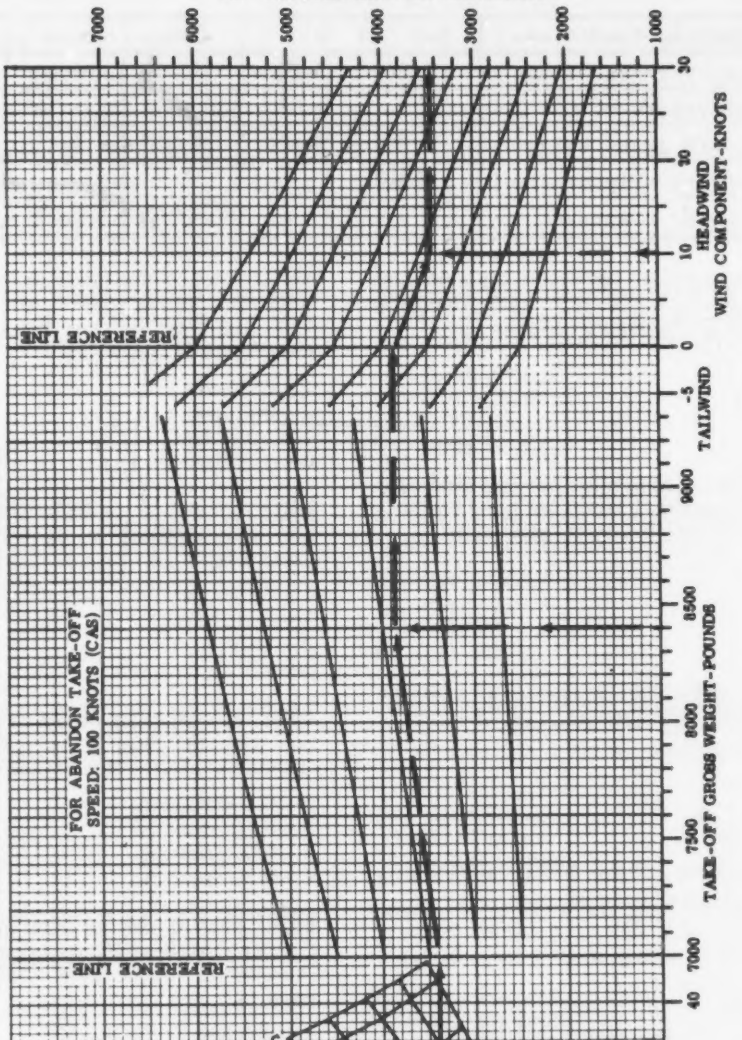


Figure 31

Table 5

Operating Conditions	B-6	B-7	B-8	B-9	B-10
Airport press. alt.	3,000	4,000	1,000	1,000	3,000
Temperature (°C)		+40°C.	ISA +5°C.	ISA -10°C	+19°C.
Takeoff gross weight	8,800	8,800	9,000	7,600	8,900
Headwind component	CALM		----	----	10 knots
Tailwind component	----	----	5 knots	5 knots	----

6616. At what temperature can you expect the accelerate and stop distance to be 4,000 feet using Operating Conditions B–6, Table 5? (See Figure 31, page 73.)

1— +34° C.
2— +30° C.
3— +24° C.
4— +16° C.

6617. With what headwind component can you expect the accelerate and stop distance to be 4,000 feet using Operating Conditions B–7, Table 5? (See Figure 31, page 73.)

1—30 knots.
2—25 knots.
3—20 knots.
4—10 knots.

6618. What is the accelerate and stop distance for Operating Conditions B–8, Table 5? (See Figure 31, page 73.)

1—3,200 feet.
2—3,400 feet.
3—3,600 feet.
4—4,000 feet.

6619. What is the accelerate and stop distance for Operating Conditions B–9, Table 5? (See Figure 31, page 73.)

1—3,000 feet.
2—3,200 feet.
3—3,400 feet.
4—3,500 feet.

6620. What is the accelerate and stop distance for Operating Conditions B–10, Table 5? (See Figure 31, page 73.)

1—2,900 feet.
2—3,200 feet.
3—3,500 feet.
4—3,800 feet.

6621. What is the increase in the accelerate and stop distance if the headwind component decreases to calm from that given for Operating Conditions B–11, Table 6 (See Figure 31, page 73.)

1—650 feet.
2—800 feet.
3—1,100 feet.
4—1,250 feet.

6622. At what temperature can you expect the accelerat and stop distance to be 3,200 feet using Operatin Conditions B–12, Table 6? (See Figure 31, page 73.)

1— +30° C.
2— +15° C.
3— +5° C.
4— -5° C.

6623. At what gross weight can you expect the accelerat and stop distance to be 4,200 feet using Operatin Conditions B–13, Table 6? (See Figure 31, page 73.)

1—8,300 pounds.
2—8,550 pounds.
3—9,000 pounds.
4—9,300 pounds.

6624. What is the decrease in the accelerate and sto distance if the headwind component increases to 20 knots f Operating Conditions B–14, Table 6? (See Figure 31, page 73.)

1—200 feet.
2—400 feet.
3—600 feet.
4—800 feet.

6625. With what wind component can you expect th accelerate and stop distance to be 4,200 feet using Operatin Conditions B–15, Table 6? (See Figure 31, page 73.)

1—8 knots, headwind.
2—5 knots, tailwind.
3—12 knots, headwind.
4—0 knots, calm.

Table 6

Operating Conditions	B-11	B-12	B-13	B-14	B-15
Airport press. alt.	3,000	2,000	4,000	S.L.	6,000
Temperature (°C)	ISA +10°C	ISA +20°C	+16°C	ISA +5°C	+12°C
Takeoff gross weight	9,000	9,100		8,900	9,300
Headwind component	20 knots	10 knots	----	CALM	
Tailwind component	----	----	5 knots	----	

Table 7

Operating Conditions	C-1	C-2	C-3	C-4	C-5
Airport altitude	2,000	4,000	3,000	4,000	6,000
Temperature (°C)	+10°C.	ISA +20.C	+19°C.	+40°C.	+26°C.
Takeoff gross weight					
Headwind component	8 knots	5 knots	5 knots	CALM	12 knots
Tailwind component	---	---	---	---	---

6626. At what takeoff gross weight can you expect the takeoff distance to be 2,000 feet using Operating Conditions C–1, Table 7? (See Figure 32, page 77.)

1—8,700 pounds.
2—8,850 pounds.
3—9,050 pounds.
4—9,200 pounds.

6627. At what takeoff gross weight can you expect the takeoff distance to be 2,400 feet using Operating Conditions C–2, Table 7? (See Figure 32, page 77.)

1—7,850 pounds.
2—7,650 pounds.
3—7,500 pounds.
4—7,950 pounds.

6628. At what takeoff gross weight can you expect the takeoff distance to be 2,200 feet using Operating Conditions C–3, Table 7? (See Figure 32, page 77.)

1—8,850 pounds.
2—8,650 pounds.
3—8,500 pounds.
4—8,300 pounds.

6629. At what takeoff gross weight can you expect the takeoff distance to be 3,200 feet using Operating Conditions C–4, Table 7? (See Figure 32, page 77.)

1—8,050 pounds.
2—8,300 pounds.
3—8,450 pounds.
4—8,550 pounds.

6630. At what takeoff gross weight can you expect the takeoff distance to be 2,800 feet using Operating Conditions C–5, Table 7? (See Figure 32, page 77.)

1—7,800 pounds.
2—8,050 pounds.
3—8,300 pounds.
4—8,500 pounds.

6631. At what takeoff gross weight can you expect the takeoff distance to be 2,000 feet using Operating Conditions C–6, Table 8? (See Figure 32, page 77.)

1—8,600 pounds.
2—8,800 pounds.
3—9,000 pounds.
4—9,200 pounds.

6632. At what temperature can you expect the takeoff distance to be 2,000 feet using Operating Conditions C–7, Table 8? (See Figure 32, page 77.)

1—ISA -3° C.
2—+12° C.
3—+15° C.
4—ISA -10° C.

6633. At what takeoff gross weight can you expect the takeoff distance to be 2,800 feet using Operating Conditions C–8, Table 8? (See Figure 32, page 77.)

1—8,000 pounds.
2—8,300 pounds.
3—8,800 pounds.
4—9,100 pounds.

6634. At what takeoff gross weight can you expect the takeoff distance to be 2,600 feet using Operating Conditions C–9, Table 8? (See Figure 32, page 77.)

1—7,900 pounds.
2—8,150 pounds.
3—8,350 pounds.
4—8,500 pounds.

6635. At what temperature can you expect the takeoff distance to be 2,800 feet using Operating Conditions C–10, Table 8? (See Figure 32, page 77.)

1— +11° C.
2— +16° C.
3— +19° C.
4— +22° C.

Table 8

Operating Conditions	C-6	C-7	C-8	C-9	C-10
Airport press. alt.	1,000	4,000	4,000	6,000	4,000
Temperature (°C)	+4°C.	---	+20°C.	0°C.	---
Takeoff gross weight	---	9,100	---	---	8,400
Headwind component	CALM	18 knots	---	---	---
Tailwind component	---	---	5 knots	5 knots	5 knots

Table 9

Operating Conditions	C-11	C-12	C-13	C-14	C-15
Airport altitude	2,000	5,000	3,000	4,000	5,000
Temperature (°C)	+20°C.	ISA +10°C	ISA +15°C	+15°C.	ISA -5°C.
Takeoff gross weight	9,000	8,850	8,600	9,150	8,950
Headwind component	5 knots	15 knots	CALM	18 knots	---
Tailwind component	---	---	---	---	5 knots

6636. What is the takeoff distance for Operating Conditions C–11, Table 9? (See Figure 32.)

1—1,800 feet.
2—2,000 feet.
3—2,200 feet.
4—2,400 feet.

6637. What is the takeoff distance for Operating Conditions C–12, Table 9? (See Figure 32.)

1—2,150 feet.
2—2,350 feet.
3—2,500 feet.
4—2,600 feet.

6638. What is the takeoff distance for Operating Conditions C–13, Table 9? (See Figure 32.)

1—2,400 feet.
2—2,250 feet.
3—2,100 feet.
4—1,950 feet.

6639. What is the takeoff distance for Operating Conditions C–14, Table 9? (See Figure 32.)

1—2,550 feet.
2—2,400 feet.
3—2,350 feet.
4—2,200 feet.

6640. What is the takeoff distance for Operating Conditions C–15, Table 9? (See Figure 32.)

1—2,850 feet.
2—2,400 feet.
3—2,550 feet.
4—2,700 feet.

6641. In a light twin–engine airplane with one engine inoperative, when is it acceptable to allow the ball of a slip–skid indicator to be deflected outside the reference lines?

1—To avoid excessively steep banks in turns near the ground.
2—When practicing imminent stalls in a banked attitude.
3—While maneuvering at minimum controllable airspeed to avoid overbanking.
4—When operating at any airspeed greater than V_{MC}.

6642. Which of the following takeoff and initial clim techniques will provide the most efficient climb to a sa single–engine maneuvering altitude?

1—Lift off at an airspeed slightly above V_{MC}, accelera quickly to V_Y and maintain V_Y to at least 500 fe above field elevation or clear of local obstacles.
2—Lift off at V_X and maintain V_X to at least 500 fe above field elevation or local obstacles.
3—Lift off at V_{MC}, accelerate to cruise airspeed in lev flight, then start a steep climb using the inertia high speed to climb more rapidly than would b possible at a lower speed.
4—After lift–off at V_{MC}, accelerate to V_Y and leave win flaps partially extended to assure maximum lift an thereby reach a minimum safe single–engin maneuvering altitude in the least amount of time.

6643. Which of the following describes the safest an most efficient takeoff and initial climb procedure in a ligh twin–engine airplane? Accelerate to

1—best engine–out rate–of–climb airspeed while on th ground, then lift off and climb at that speed.
2—V_{MC}, then lift off at that speed and climb at th maximum angle–of–climb airspeed.
3—an airspeed slightly above V_{MC}, then lift off and clim at the best rate–of–climb airspeed.
4—an airspeed above V_{MC}, then lift off and accelerate t cruise speed and climb at that speed.

6644. Which procedure is recommended for an engine out approach and landing?

1—Upon entering the final approach leg of the traffi pattern, the altitude and airspeed should b considerably higher than normal.
2—To assure missed–approach capability on an IL approach, do not extend the landing gear until ove the runway threshold.
3—Maintain at least V_{MC} throughout the approach an landing.
4—In most light twins the flightpath and procedure should be almost identical to a normal approach an landing.

NORMAL TAKE-OFF DISTANCE

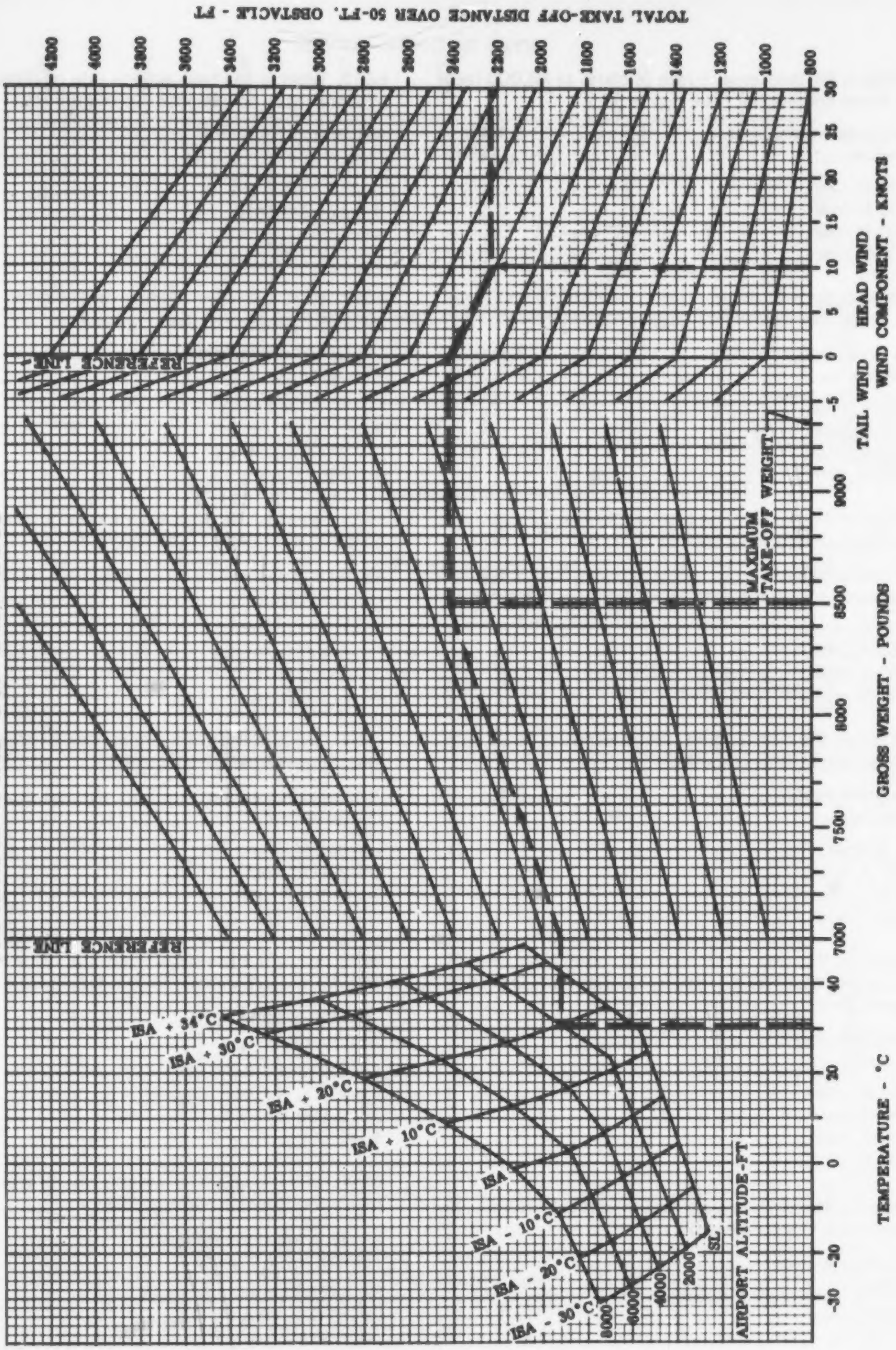


Figure 32

6645. What is the twin–engine rate of climb at 14,000 feet MSL for these conditions? (See Figure 33.)

Airplane gross weight..8,300 lb.
Temperature...–6° C

1—1,200 ft./min.
2—1,500 ft./min.
3—1,400 ft./min.
4—1,300 ft./min.

6646. What is the twin–engine rate of climb at 10,000 feet MSL for these conditions? (See Figure 33.)

Airplane gross weight..8,500 lb.
Temperature..ISA +5° C

1—1,750 ft./min.
2—1,650 ft./min.
3—1,550 ft./min.
4—1,400 ft./min.

6647. What is the twin–engine rate of climb at 12,000 feet MSL for these conditions? (See Figure 33.)

Airplane gross weight..8,100 lb.
Temperature..ISA +10° C

1—1,250 ft./min.
2—1,450 ft./min.
3—1,650 ft./min.
4—1,850 ft./min.

6648. What is the twin–engine rate of climb at FL180 for these conditions? (See Figure 33.)

Airplane gross weight..8,400 lb.
Temperature...ISA

1—900 ft./min.
2—1,100 ft./min.
3—1,300 ft./min.
4—1,400 ft./min.

6649. What is the twin–engine rate of climb after takeoff from an airport that has a pressure altitude of 2,000 feet? (See Figure 33.)

Airplane gross weight..9,200 lb.
Temperature..ISA –15° C

1—2,150 ft./min.
2—2,050 ft./min.
3—1,900 ft./min.
4—1,700 ft./min.

6650. What is the twin–engine rate of climb at FL190 for these conditions? (See Figure 33.)

Airplane gross weight..7,800 lb.
Temperature..ISA –10° C

1—1,350 ft./min.
2—1,200 ft./min.
3—1,025 ft./min.
4—1,450 ft./min.

6651. What is the twin–engine rate of climb at 6,000 fe MSL for these conditions? (See Figure 33.)

Airplane gross weight..8,100
Temperature..ISA +4°

1—2,200 ft./min.
2—2,100 ft./min.
3—1,950 ft./min.
4—1,850 ft./min.

6652. What is the twin–engine rate of climb at 14,000 fe for these conditions? (See Figure 33.)

Airplane gross weight..7,950
Temperature..ISA +15°

1—1,200 ft./min.
2—1,100 ft./min.
3—1,000 ft./min.
4—800 ft./min.

6653. What is the twin–engine rate of climb at 2,000 fe for these conditions? (See Figure 33.)

Airplane gross weight..7,850
Temperature..ISA +25°

1—1,750 ft./min.
2—2,200 ft./min.
3—2,050 ft./min.
4—1,900 ft./min.

6654. What is the twin–engine rate of climb at FL200 these conditions? (See Figure 33.)

Airplane gross weight..8,400
Temperature...–15°

1—700 ft./min.
2—850 ft./min.
3—1,000 ft./min.
4—600 ft./min.

6655. What is the twin–engine rate of climb at 5,000 f MSL for these conditions? (See Figure 33.)

Airplane gross weight..7,800
Temperature..ISA +15°

1—1,850 ft./min.
2—2,300 ft./min.
3—2,100 ft./min.
4—1,950 ft./min.

6656. What is the twin–engine rate of climb at FL220 these conditions? (See Figure 33.)

Airplane gross weight..8,300
Temperature...–29

1—900 ft./min.
2—525 ft./min.
3—650 ft./min.
4—775 ft./min.

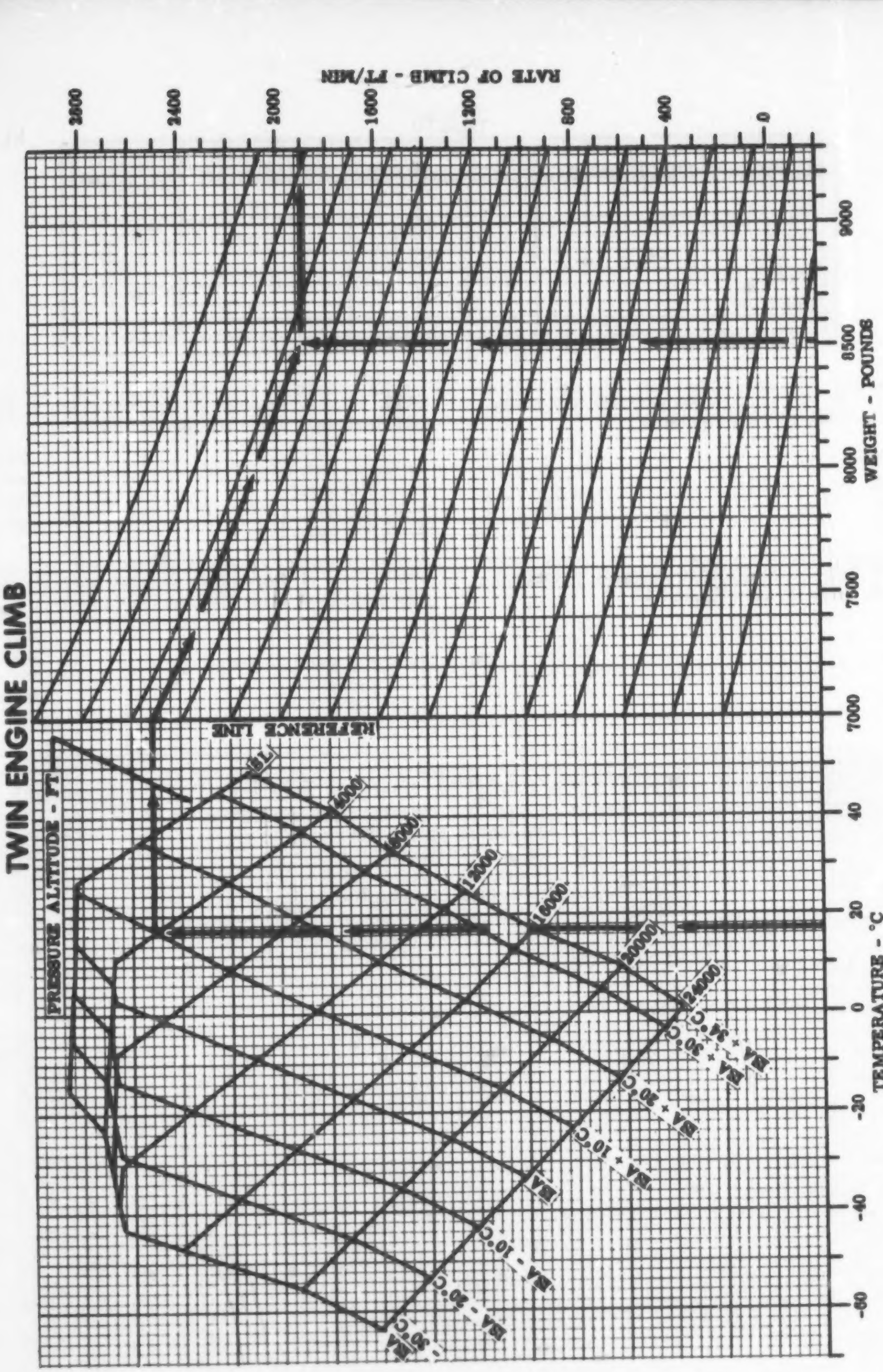

TWIN ENGINE CLIMB

Figure 33

Table 10

OPERATING CONDITIONS	D-1	D-2	D-3	D-4
OAT (°C)	+5°C	-10°C	+30°C	+35°C
Press. Alt.	1,000	2,300	3,000	S.L.
Weight	6,200	5,800	6,400	6,300
Headwind	25		5	
Tailwind		5		2

6657. What is the takeoff distance over 50 feet under conditions D-1, Table 10? (See Figure 34.)

1—1,900 feet.
2—1,750 feet.
3—1,500 feet.
4—1,250 feet.

6658. What is the takeoff distance over 50 feet under conditions D-2, Table 10? (See Figure 34.)

1—2,400 feet.
2—1,650 feet.
3—1,850 feet.
4—2,200 feet.

6659. What is the takeoff distance over 50 feet under conditions D-3, Table 10? (See Figure 34.)

1—2,050 feet.
2—2,400 feet.
3—2,650 feet.
4—2,200 feet.

6660. What is the takeoff distance over 50 feet under conditions D-4, Table 10? (See Figure 34.)

1—2,200 feet.
2—2,500 feet.
3—1,850 feet.
4—1,200 feet.

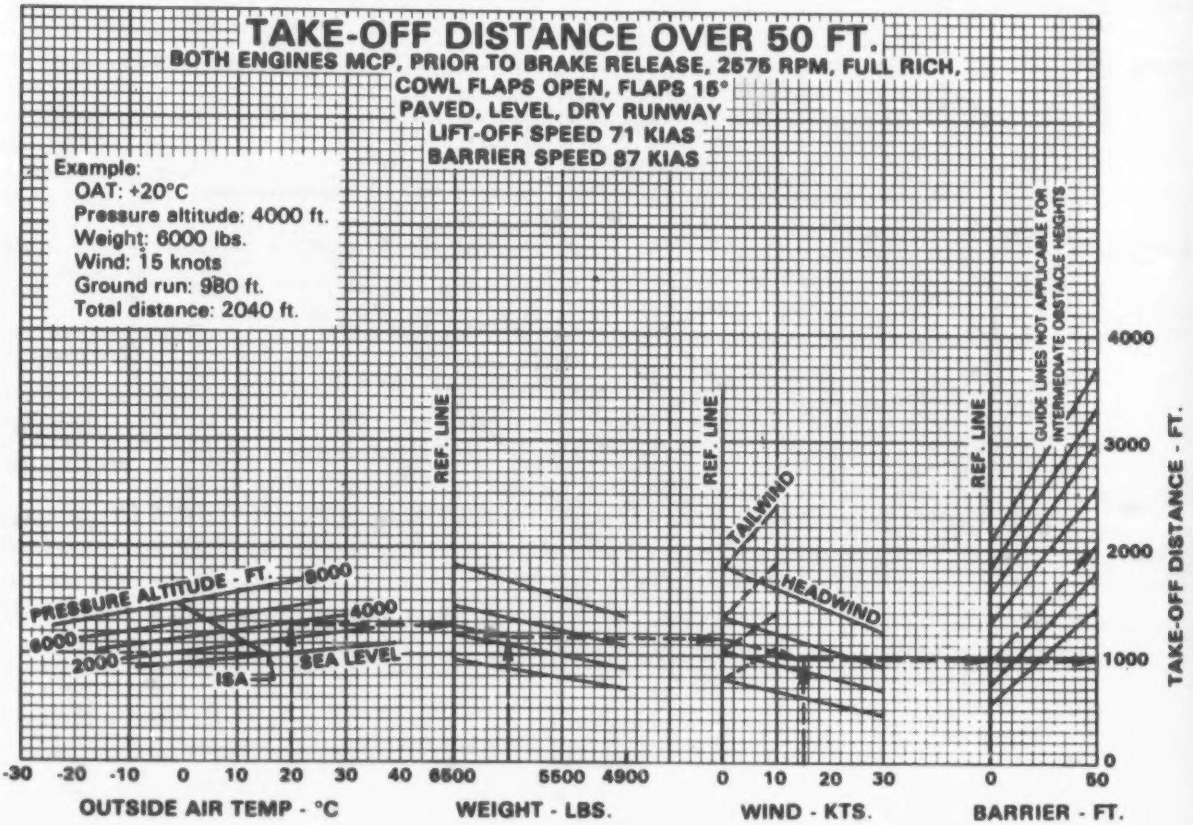


Figure 34

Table 11

OPERATING CONDITIONS	E-1	E-2	E-3	E-4
OAT (°C)	-15°C	+20°C	0°C	+30°C
Press. Alt.	3,500	5,000	5,000	2,500
Weight	6,400	6,500	5,400	5,700
Headwind			20	15
Tailwind	5	5		

6661. What is the accelerate-stop distance under conditions E-1, Table 11? (See Figure 35.)

1—3,100 feet.
2—2,800 feet.
3—2,400 feet.
4—2,200 feet.

6662. What is the accelerate-stop distance under conditions E-2, Table 11? (See Figure 35.)

1—3,900 feet.
2—3,600 feet.
3—3,300 feet.
4—3,000 feet.

6663. What is the accelerate-stop distance under conditions E-3, Table 11? (See Figure 35.)

1—2,500 feet.
2—2,200 feet.
3—1,900 feet.
4—1,700 feet.

6664. What is the accelerate-stop distance under conditions E-4, Table 11? (See Figure 35.)

1—3,800 feet.
2—3,100 feet.
3—2,500 feet.
4—2,200 feet.

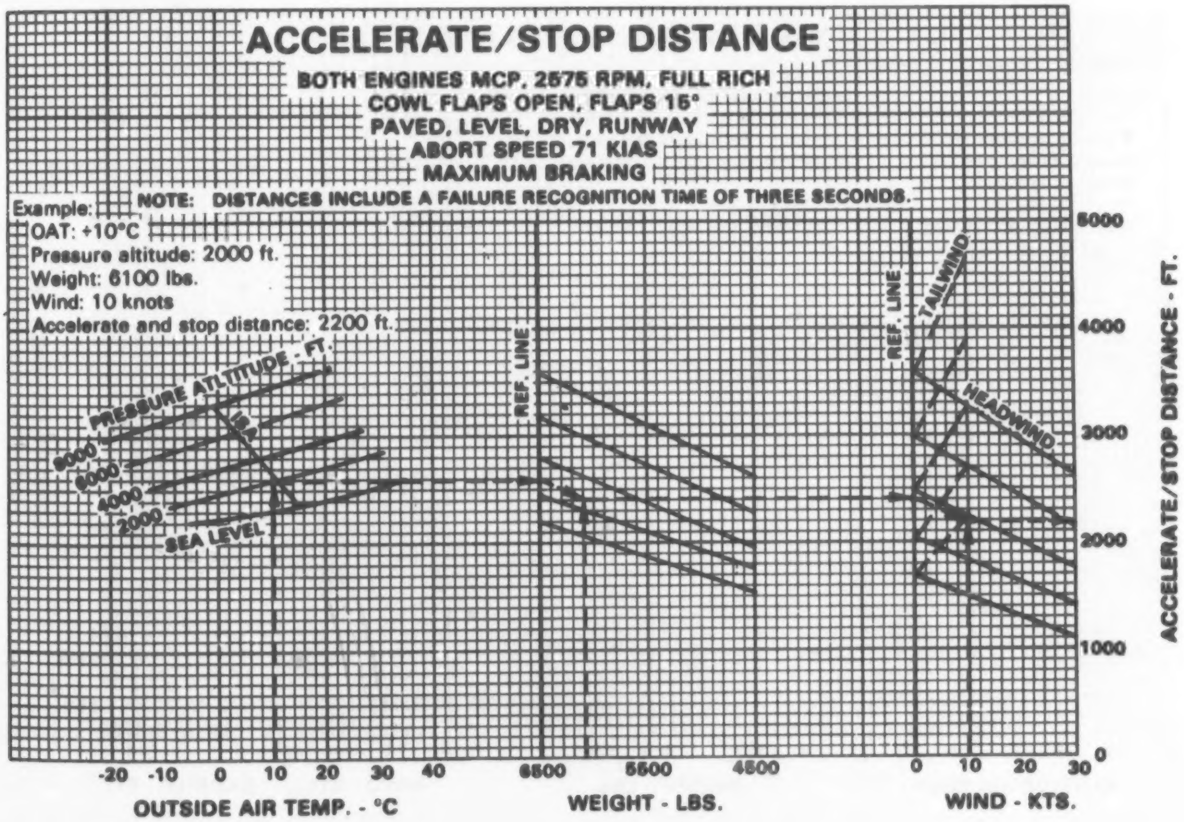


Figure 35

Table 12

OPERATING CONDITIONS	F-1	F-2	F-3	F-4
OAT (°C)	-10°C	+35°C	+27°C	+15°C
Press. Alt.	4,800	3,500	4,800	1,000
Weight	6,300	5,700	6,500	5,400
Headwind	10			20
Tailwind		5	10	

6665. What is the landing distance over 50 feet under conditions F-1, Table 12? (See Figure 36.)

1—2,750 feet.
2—2,400 feet.
3—2,250 feet.
4—1,800 feet.

6666. What is the landing distance over 50 feet under conditions F-2, Table 12? (See Figure 36.)

1—1,850 feet.
2—2,200 feet.
3—2,500 feet.
4—2,850 feet.

6667. What is the landing distance over 50 feet under conditions F-3, Table 12? (See Figure 36.)

1—3,300 feet.
2—3,100 feet.
3—2,550 feet.
4—2,150 feet.

6668. What is the landing distance over 50 feet under conditions F-4, Table 12? (See Figure 36.)

1—2,000 feet.
2—1,850 feet.
3—1,700 feet.
4—1,350 feet.

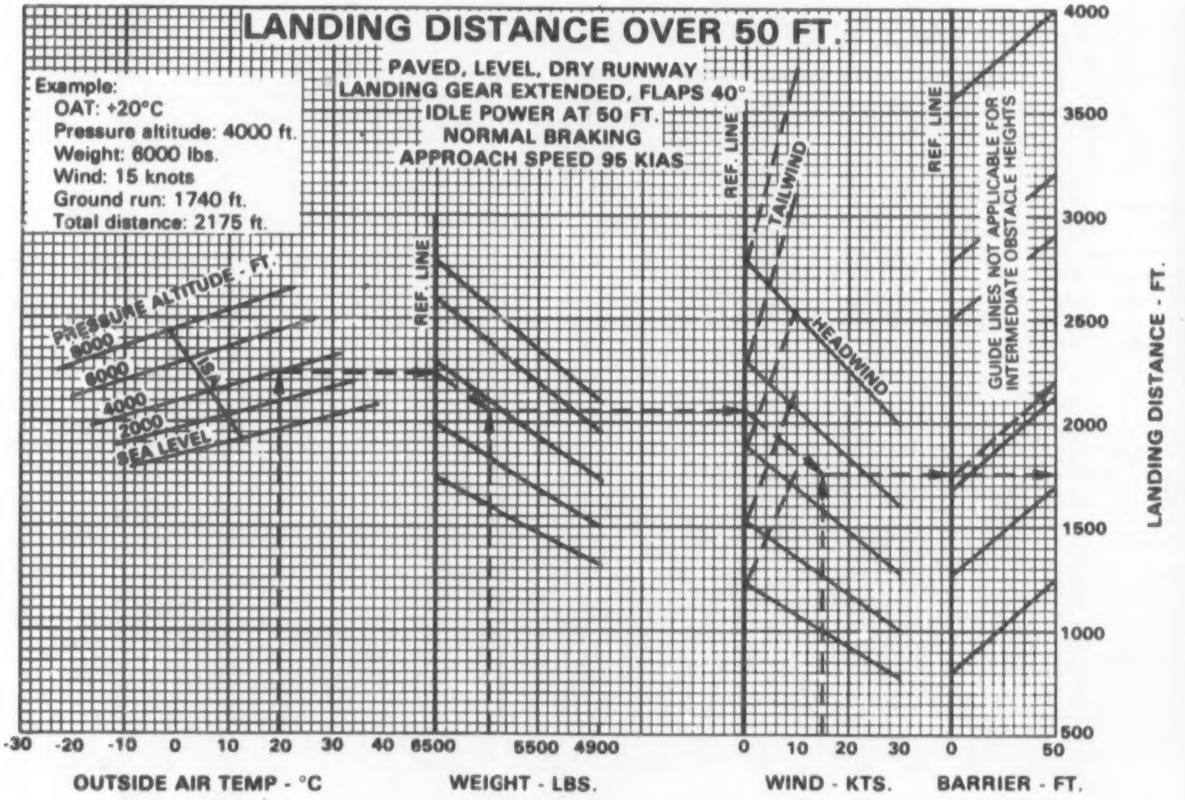


Figure 36

Table 13

OPERATING CONDITIONS	G–1	G–2	G–3	G–4
OAT (°C)	-10°C	+30°C	+37°C	-15°C
Press. Alt.	4,500	2,000	500	3,500
Weight	6,300	5,800	6,500	6,200

6669. What is the single-engine rate of climb under conditions G–1, Table 13? (See Figure 37.)

1—250 ft./min.
2—230 ft./min.
3—220 ft./min.
4—210 ft./min.

6670. What is the single-engine rate of climb under conditions G–2, Table 13? (See Figure 37.)

1—320 ft./min.
2—350 ft./min.
3—365 ft./min.
4—385 ft./min.

6671. What is the single-engine best rate-of-climb airspeed under conditions G–3, Table 13? (See Figure 37.)

1—92 KIAS.
2—94 KIAS.
3—96 KIAS.
4—98 KIAS.

6672. What is the single-engine best rate-of-climb airspeed under conditions G–4, Table 13? (See Figure 37.)

1—98 KIAS.
2—96 KIAS.
3—94 KIAS.
4—92 KIAS.

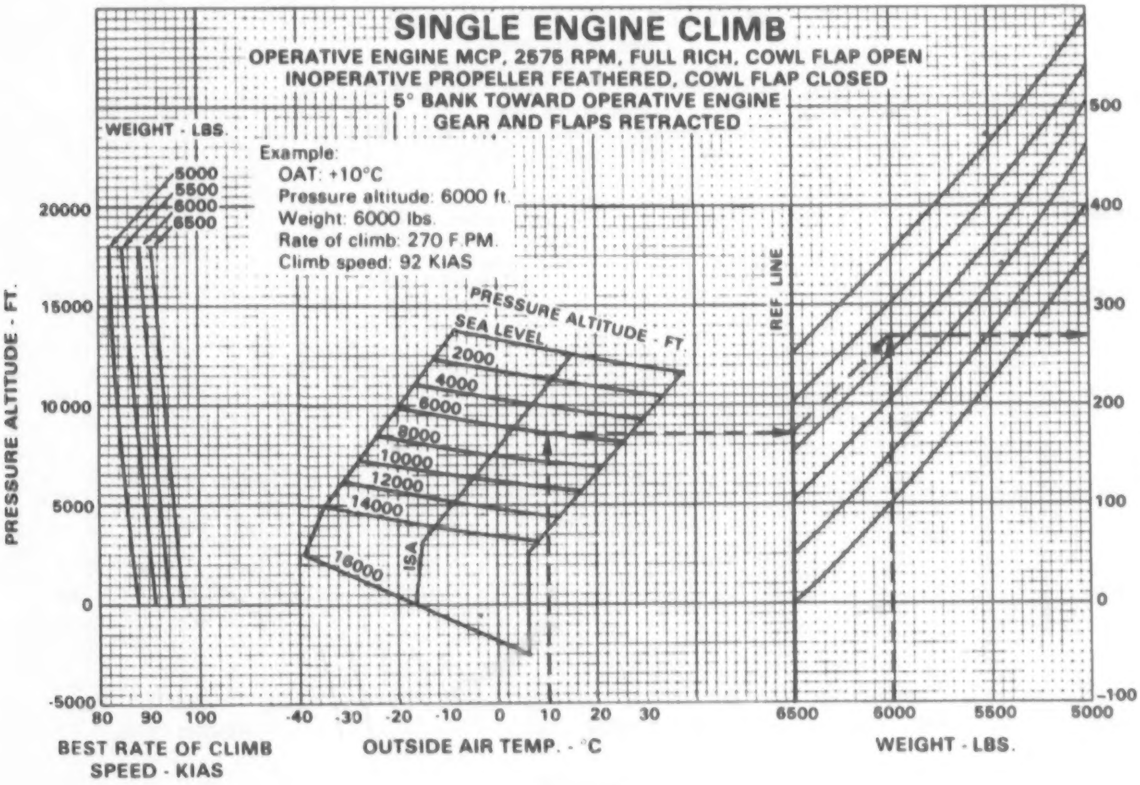


Figure 37

Table 14

OPERATING CONDITIONS	H-1	H-2	H-3	H-4
OAT (°C)	-10°C	+35°C	-20°C	-15°C
Press. Alt.	5,000	S.L.	4,000	3,000
Weight	6,300	5,800	6,500	6,200

6673. What is the multiengine rate of climb under conditions H-1, Table 14? (See Figure 38.)

1—1,350 ft./min.
2—1,450 ft./min.
3—1,700 ft./min.
4—1,900 ft./min.

6674. What is the multiengine rate of climb under conditions H-2, Table 14? (See Figure 38.)

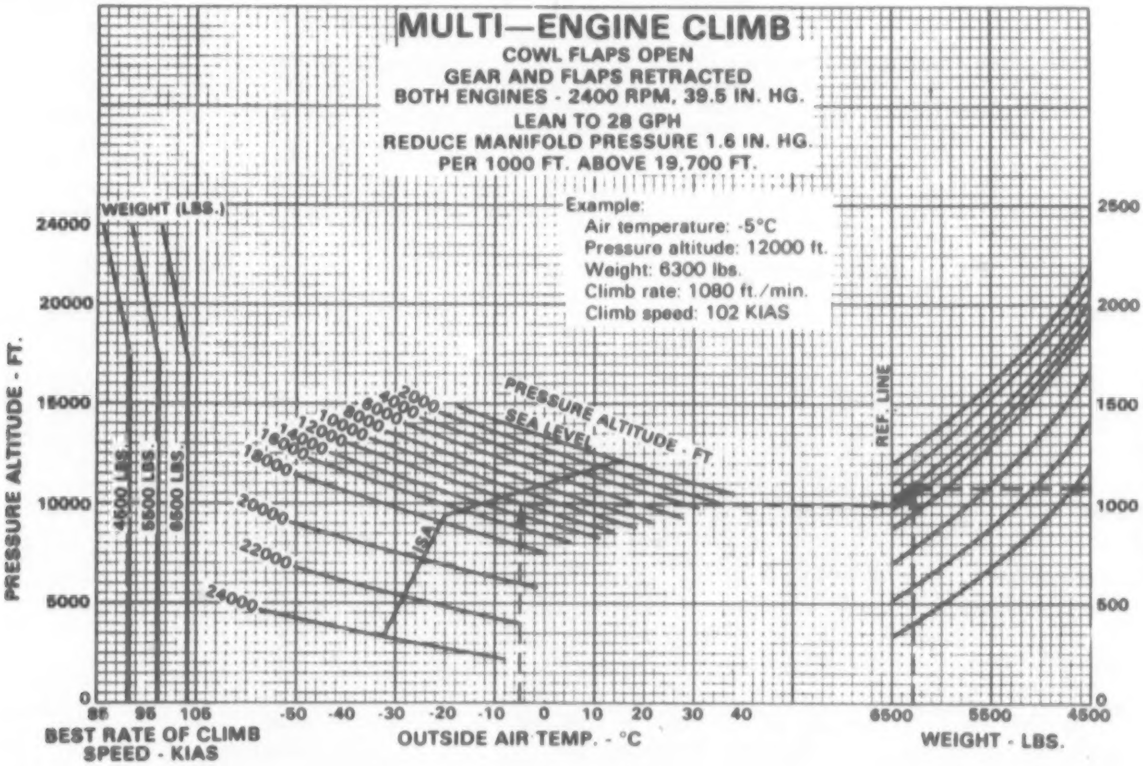
1—1,500 ft./min.
2—1,350 ft./min.
3—1,200 ft./min.
4—1,050 ft./min.

6675. What is the multiengine rate of climb under conditions H-3, Table 14? (See Figure 38.)

1—1,400 ft./min.
2—1,250 ft./min.
3—1,150 ft./min.
4—1,050 ft./min.

6676. What is the multiengine best rate-of-climb airspeed under conditions H-4, Table 14? (See Figure 38.)

1—95 KIAS.
2—97 KIAS.
3—99 KIAS.
4—101 KIAS.



MULTI—ENGINE CLIMB
COWL FLAPS OPEN
GEAR AND FLAPS RETRACTED
BOTH ENGINES - 2400 RPM, 39.5 IN. HG.
LEAN TO 28 GPH
REDUCE MANIFOLD PRESSURE 1.6 IN. HG.
PER 1000 FT. ABOVE 19,700 FT.

Example:
Air temperature: -5°C
Pressure altitude: 12000 ft.
Weight: 6300 lbs.
Climb rate: 1080 ft./min.
Climb speed: 102 KIAS

Figure 38

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NOTE: Questions 6677 through 6684 are based on performance charts of a two-engine FAR Part 25 airplane. See Appendix 2, pages 18 and 19 for a discussion of takeoff climb segments and approach climb.

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6677. (See NOTE above.) What is the climb gradient of the first segment climb, under these conditions? (See Figure 39.)

Airport air temperature	+80° F
Airport pressure altitude	4,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	OFF
Gross weight at brake release	22,700 lb.

1—.0025.
2—.035.
3—.045.
4—Less than minimum allowable.

6678. (See NOTE above.) What is the limiting weight for the first segment climb, under these conditions? (See Figure 39.)

Airport air temperature	+82° F
Airport pressure altitude	2,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	OFF

1—22,500 lb.
2—23,000 lb.
3—23,500 lb.
4—24,000 lb.

6679. (See NOTE above.) What is the limiting weight for the first segment climb, under these conditions? (See Figure 39.)

Airport air temperature	+38° F
Airport pressure altitude	5,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	ON

1—18,500 lb.
2—20,500 lb.
3—22,500 lb.
4—24,000 lb.

6680. (See NOTE above.) At what temperature is 21,200 pounds the limiting weight for the first segment climb, under these conditions? (See Figure 39.)

Airport pressure altitude	4,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	OFF

1— +71° F.
2— +82° F.
3— +92° F.
4— +100° F.

6681. (See NOTE above.) At what temperature is 22,500 pounds the limiting weight for the first segment climb, under these conditions? (See Figure 39.)

Airport pressure altitude	3,000 ft.
Cabin pressurization	ON
Engine inlet anti-ice	OFF

1— +101° F.
2— +92° F.
3— +80° F.
4— +70° F.

6682. (See NOTE above.) What is the limiting weight for the first segment climb, under these conditions? (See Figure 39.)

Airport air temperature	+40° F
Airport pressure altitude	3,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	ON

1—24,000 lb.
2—23,200 lb.
3—22,400 lb.
4—21,500 lb.

6683. (See NOTE above.) What is the climb gradient of the first segment climb, under these conditions? (See Figure 39.)

Airport air temperature	+85° F
Airport pressure altitude	3,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	OFF
Gross weight at brake release	23,000 lb.

1—Less than minimum allowable.
2—.022.
3—Minimum allowable.
4—.0175.

6684. (See NOTE above.) What is the limiting weight for the first segment climb, under these conditions? (See Figure 39.)

Airport air temperature	+30° F
Airport pressure altitude	3,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	ON

1—19,800 lb.
2—20,200 lb.
3—22,000 lb.
4—24,000 lb.

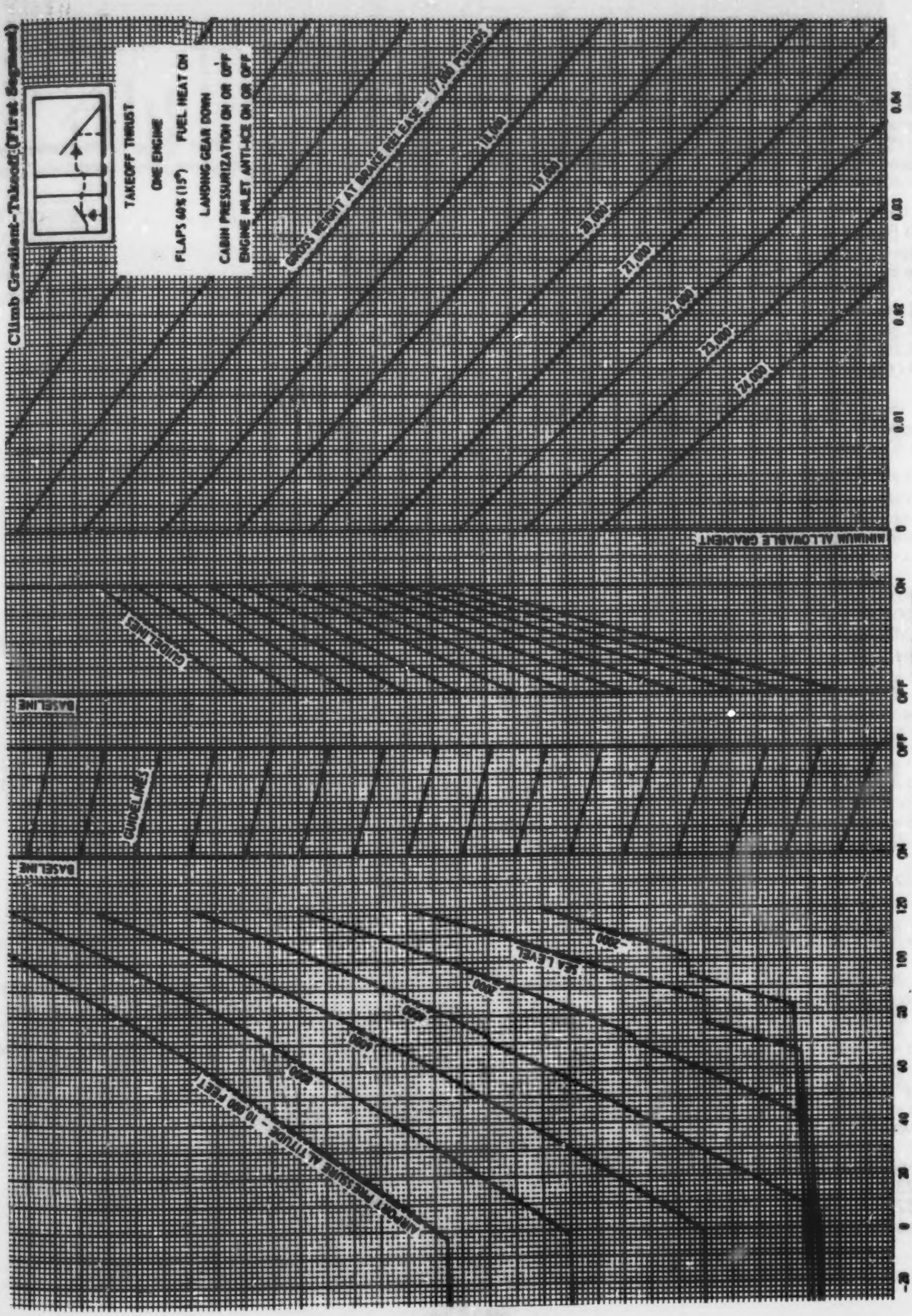

Figure 39

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NOTE: Questions 6685 through 6692 are based on performance charts of a two-engine FAR Part 25 airplane. See Appendix 2, pages 18 and 19 for a discussion of takeoff climb segments and approach climb.

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6685. (See NOTE above.) What is the limiting weight for the second segment climb, under these conditions? (See Figure 40.)

Airport air temperature..+90° F
Airport pressure altitude....................................1,000 ft.
Cabin pressurization...OFF
Engine inlet anti–ice...OFF

1—21,100 lb.
2—22,300 lb.
3—23,200 lb.
4—24,000 lb.

6686. (See NOTE above.) What is the climb gradient for the second segment climb, under these conditions? (See Figure 40.)

Airport air temperature..+40° F
Airport pressure altitude....................................4,000 ft.
Cabin pressurization...OFF
Engine inlet anti–ice...ON
Gross weight at brake release............................20,500 lb.

1—Minimum allowable.
2—.030.
3—.034.
4—Less than minimum allowable.

6687. (See NOTE above.) What is the climb gradient for the second segment climb, under these conditions? (See Figure 40.)

Airport air temperature..+55° F
Airport pressure altitude....................................4,200 ft.
Cabin pressurization...OFF
Engine inlet anti–ice...OFF
Gross weight at brake release............................21,000 lb.

1—.042.
2—.037.
3—.035.
4—Minimum allowable.

6688. (See NOTE above.) What is the climb gradient of the second segment climb, under these conditions? (See Figure 40.)

Airport air temperature..+40° F
Airport pressure altitude....................................3,000 ft.
Cabin pressurization...OFF
Engine inlet anti–ice...ON
Gross weight at brake release............................22,500 lb.

1—Minimum allowable.
2—.028.
3—.032.
4—Less than minimum allowable.

6689. (See NOTE above.) What is the climb gradient of the second segment climb, under these conditions? (See Figure 40.)

Airport air temperature..+40° F
Airport pressure altitude....................................5,000 ft.
Cabin pressurization...ON
Engine inlet anti–ice...ON
Gross weight at brake release............................19,100 lb.

1—.018 and less than minimum allowable.
2—.027 and greater than minimum allowable.
3—.038 and greater than minimum allowable.
4—.022 and less than minimum allowable.

6690. (See NOTE above.) At what temperature is 22,400 pounds the limiting weight for the second segment climb, under these conditions? (See Figure 40.)

Airport pressure altitude....................................2,200 ft.
Cabin pressurization...OFF
Engine inlet anti–ice...OFF

1— +96° F.
2— +87° F.
3— +80° F.
4— +73° F.

6691. (See NOTE above.) At what temperature is 23,500 pounds the limiting weight for the second segment climb, under these conditions? (See Figure 40.)

Airport pressure altitude....................................4,100 ft.
Cabin pressurization...OFF
Engine inlet anti–ice...OFF

1— +100° F.
2— +84° F.
3— +79° F.
4— +50° F.

6692. (See NOTE above.) What is the limiting weight for the second segment climb, under these conditions? (See Figure 40.)

Airport air temperature..+30° F
Airport pressure altitude....................................3,700 ft.
Cabin pressurization...OFF
Engine inlet anti–ice...ON

1—20,800 lb.
2—21,800 lb.
3—23,100 lb.
4—24,000 lb.

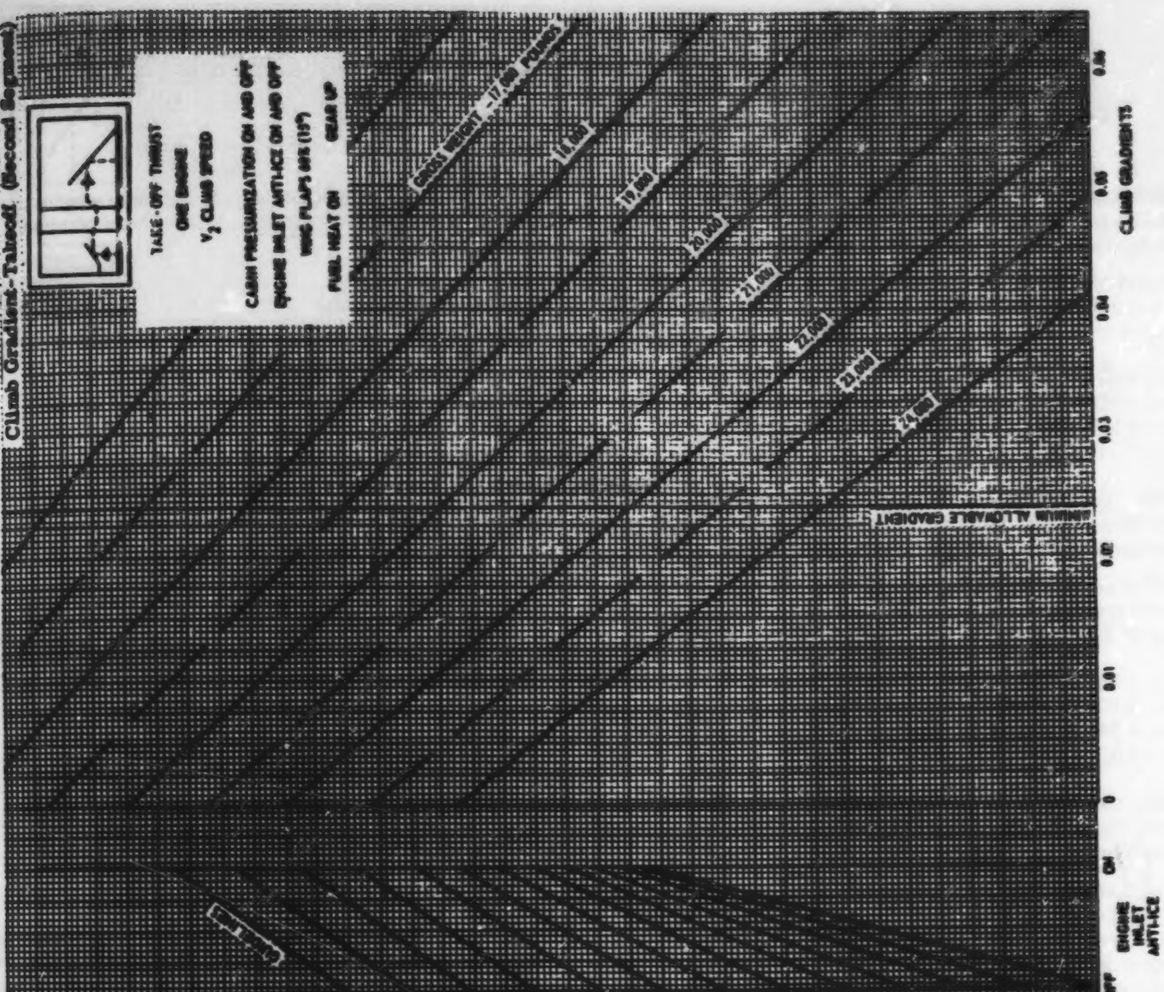

Climb Gradient - Takeoff (Second Segment)
TAKE-OFF THRUST
ONE ENGINE
V_2 CLIMB SPEED
CABIN PRESSURIZATION ON AND OFF
ENGINE INLET ANTI-ICE ON AND OFF
WING FLAPS 8/8 (15°)
FUEL HEAT ON
GEAR UP
GROSS WEIGHT - 17,000 POUNDS
18,000
19,000
20,000
21,000
22,000
23,000
24,000
MINIMUM ALLOWABLE GRADIENT
BASELINE
BASELINE
AIRPORT PRESSURE ALTITUDE - FEET
0
20
40
60
80
100
120
AIRPORT AIR TEMPERATURE - °F
ON
OFF
CABIN PRESSURE
OFF
ON
ENGINE INLET ANTI-ICE
0
0.01
0.02
0.03
0.04
0.05
0.06
CLIMB GRADIENTS

Figure 40

NOTE: Questions 6693 through 6700 are based on performance charts of a two-engine FAR Part 25 airplane. See Appendix 2, pages 18 and 19 for a discussion of takeoff climb segments and approach climb.

* * * * * * * * * * * * * * *

6693. (See NOTE above.) At what temperature is 20,400 pounds the limiting weight for a climb in approach configuration, under these conditions? (See Figure 41.)

Airport pressure altitude	4,000 ft.
Cabin pressurization	ON
Engine inlet anti-ice	OFF

1— +81° F.
2— +88° F.
3— +97° F.
4— +110° F.

6694. (See NOTE above.) At what temperature is 23,000 pounds the limiting weight for a climb in approach configuration, under these conditions? (See Figure 41.)

Airport pressure altitude	4,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	OFF

1— +65° F.
2— +70° F.
3— +84° F.
4— +92° F.

6695. (See NOTE above.) What is the climb gradient for a climb in approach configuration, under these conditions? (See Figure 41.)

Airport air temperature	+50° F
Airport pressure altitude	3,500 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	OFF
Gross weight at brake release	23,100 lb.

1—Less than minimum allowable.
2—Minimum allowable.
3—.033.
4—.036.

6696. (See NOTE above.) What is the climb gradient for a climb in approach configuration, under these conditions? (See Figure 41.)

Airport air temperature	+34° F
Airport pressure altitude	2,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	ON
Gross weight at brake release	21,500 lb.

1—.030.
2—.038.
3—.026.
4—Less than minimum allowable.

6697. (See NOTE above.) What is the limiting weight for a climb in approach configuration, under these conditions? (See Figure 41.)

Airport air temperature	+40° F
Airport pressure altitude	5,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	ON

1—20,300 lb.
2—22,400 lb.
3—24,000 lb.
4—24,600 lb.

6698. (See NOTE above.) What is the limiting weight for a climb in approach configuration, under these conditions? (See Figure 41.)

Airport Air temperature	+38° F
Airport pressure altitude	4,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	ON

1—20,900 lb.
2—21,200 lb.
3—22,400 lb.
4—23,700 lb.

6699. (See NOTE above.) What is the climb gradient for a climb in approach configuration, under these conditions? (See Figure 41.)

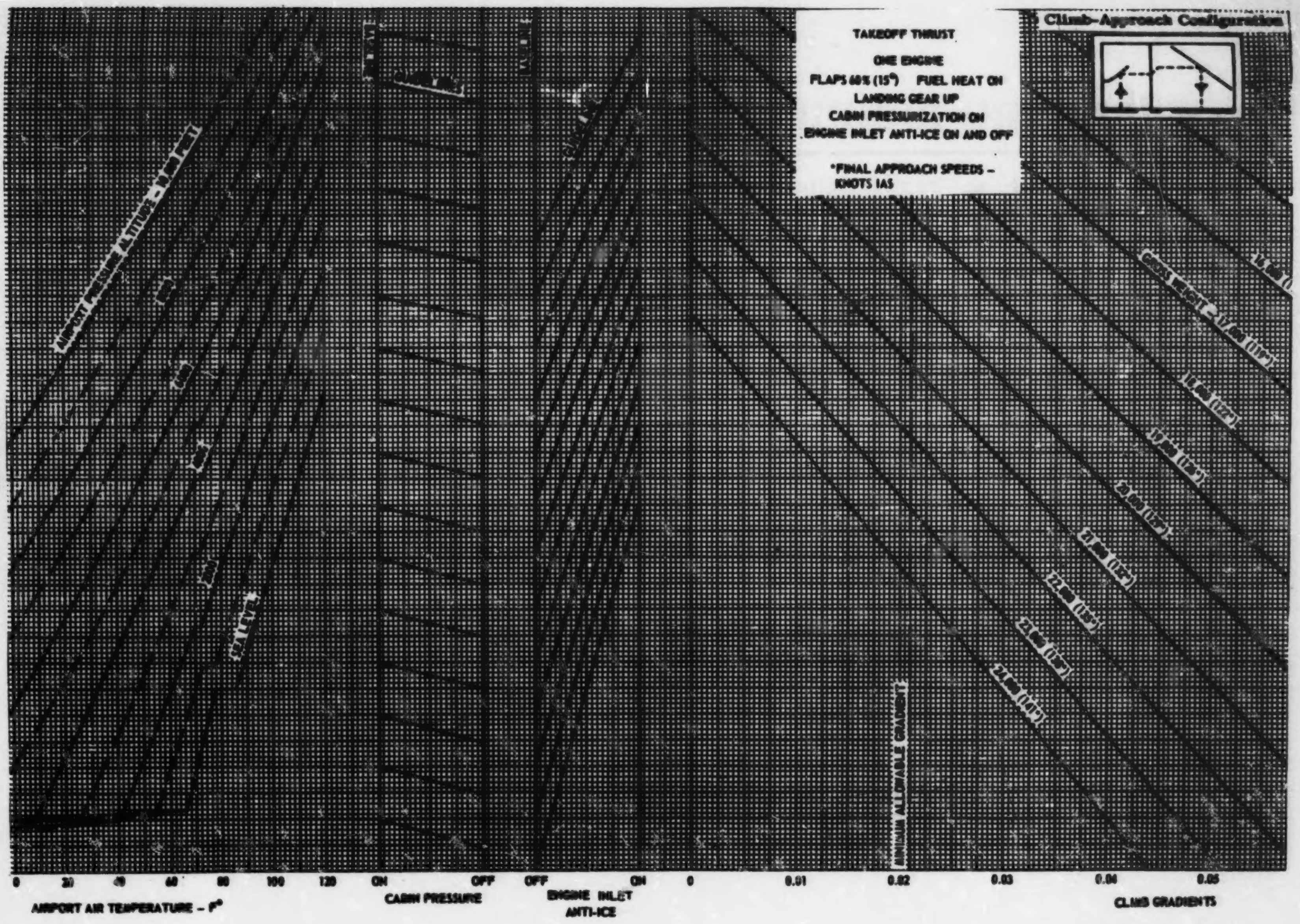
Airport air temperature	+40° F
Airport pressure altitude	2,600 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	ON
Gross weight at brake release	20,300 lb.

1—.025.
2—.035.
3—Minimum allowable.
4—Less than minimum allowable.

6700. (See NOTE above.) What is the climb gradient for a climb in approach configuration, under these conditions? (See Figure 41.)

Airport air temperature	+30° F
Airport pressure altitude	3,000 ft.
Cabin pressurization	OFF
Engine inlet anti-ice	ON
Gross weight at brake release	22,500 lb.

1—.020 and less than minimum allowable.
2—.017 and less than minimum allowable.
3—.028 and greater than minimum allowable.
4—.036 and greater than minimum allowable.



Climb–Approach Configuration

TAKEOFF THRUST

ONE ENGINE

FLAPS 60% (15°) FUEL HEAT ON

LANDING GEAR UP

CABIN PRESSURIZATION ON

ENGINE INLET ANTI-ICE ON AND OFF

*FINAL APPROACH SPEEDS – KNOTS IAS

Figure 41

Table 15

LOAD WEIGHTS AND MOMENTS

AIRPLANE DATA

Empty weight (includes undrainable oil) - - - - - - - 6,169 lb.

Empty weight moment - - - - - - - - - - - - - - - - - 9,263 $\frac{\text{MOM}}{100}$

Maximum takeoff weight - - - - - - - - - - - - - - - 9,300 lb.

Maximum landing weight - - - - - - - - - - - - - - - 8,835 lb.

WEIGHT CONDITION (Landing gear down)	CG LIMITS Fwd	 Aft
9,300 lb.	152.2 in.	160.4 in.
8,835 lb.	150.8 in.	160.4 in.
7,750 lb. (or less)	147.6 in.	160.4 in.

OCCUPANTS

	PILOT OR COPILOT	CHAIR PASSENGER		
WEIGHT	F. S. 129	F.S. 168	F.S. 210	F.S. 243
	MOMENT/100			
100	129	168	210	243
110	142	185	231	267
120	155	202	252	292
130	168	218	273	316
140	181	235	294	340
150	194	252	315	365
160	206	269	336	389
170	219	286	357	413
180	232	302	378	437
190	245	319	399	462
200	258	336	420	486

USABLE FUEL

GALLONS	6.75 LB/GAL WEIGHT	 MOMENT/100
200	1350	2005
205	1384	2065
210	1418	2122
215	1451	2182
220	1485	2241
225	1519	2299
230	1553	2355
235	1586	2409
240	1620	2461
245	1654	2510
250	1688	2563
255	1721	2613
260	1755	2665
265	1789	2717
270	1823	2772
275	1856	2828
280	1890	2881
285	1924	2937
290	1958	2996
295	1991	3054
300	2025	3113
305	2059	3171
310	2093	3227
315	2126	3284
320	2160	3339
325	2194	3398
330	2228	3457
335	2261	3513
340	2295	3568
345	2329	3621
350	2363	3653
355	2396	3707
360	2430	3762
365	2464	3817
370	2498	3872
375	2531	3926
380	2565	3981
384	2592	4025

BAGGAGE

	AFT COMPARTMENT H-ARM 27	
WEIGHT	UPPER SHELF	LOWER SHELF
	MOMENT/100	
10	28	28
20	55	55
30	83	83
40	110	110
50	138	138
60	165	165
70	193	193
80	220	220
90	248	248
100	275	275
110	303	303
120	330	330
130	358	358
140	385	385
150	413	413
160		440
170		468
180		495

TOTAL OIL

GAL	WEIGHT	MOMENT/100
3	24	24

Table 16

GROSS WEIGHT MOMENTS LIMITS

GROSS WEIGHT	MINIMUM MOMENT 100	MAXIMUM MOMENT 100
7500	11070	12030
7510	11232	12206
7520	11100	12062
7530	11114	12078
7540	11129	12094
7550	11144	12110
7560	11159	12126
7570	11173	12142
7580	11188	12158
7590	11203	12174
7600	11218	12190
7610	11232	12206
7620	11247	12222
7630	11262	12239
7640	11277	12255
7650	11291	12271
7660	11306	12287
7670	11321	12303
7680	11336	12319
7690	11350	12335
7700	11365	12351
7710	11380	12367
7720	11395	12383
7730	11409	12399
7740	11424	12415
7750	11439	12431
7760	11456	12447
7770	11473	12463
7780	11490	12479
7790	11507	12495
7800	11524	12511
7810	11541	12527
7820	11559	12543
7830	11576	12559
7840	11593	12575
7850	11610	12591
7860	11627	12607
7870	11644	12623
7880	11661	12640
7890	11678	12656
7900	11696	12672
7910	11713	12688
7920	11730	12704
7930	11747	12720
7940	11764	12736
7950	11781	12752
7960	11799	12768
7970	11816	12784
7980	11833	12800
7990	11850	12816
8000	11867	12832
8010	11885	12848
8020	11902	12864
8030	11919	12880
8040	11936	12896
8050	11953	12912
8060	11971	12928
8070	11988	12944
8080	12005	12960
8090	12022	12976
8100	12040	12992
8110	12057	13008
8120	12074	13024
8130	12092	13041
8140	12109	13057
8150	12126	13073
8160	12143	13089
8170	12161	13105
8180	12178	13121
8190	12195	13137
8200	12213	13153
8210	12404	13329
8220	12247	13185
8230	12265	13201
8240	12282	13217
8250	12299	13233
8260	12317	13249
8270	12334	13265
8280	12352	13281
8290	12369	13297
8300	12386	13313
8310	12404	13329
8320	12421	13345
8330	12438	13361
8340	12456	13377
8350	12473	13393
8360	12491	13409
8370	12508	13425
8380	12526	13442
8390	12543	13458
8400	12560	13474
8410	12578	13490
8420	12595	13506
8430	12613	13522
8440	12630	13538
8450	12648	13554
8460	12665	13570
8470	12683	13586
8480	12700	13602
8490	12718	13618
8500	12735	13634
8510	12753	13650
8520	12770	13666
8530	12788	13682
8540	12805	13698
8550	12823	13714
8560	12840	13730
8570	12858	13746
8580	12875	13762
8590	12893	13778
8600	12911	13794
8610	12928	13810
8620	12946	13826
8630	12963	13843
8640	12981	13859
8650	12998	13875
8660	13016	13891
8670	13034	13907
8680	13051	13923
8690	13069	13939
8700	13086	13955
8710	13104	13971
8720	13122	13987
8730	13139	14003
8740	13157	14019
8750	13175	14035
8760	13192	14051
8770	13210	14067
8780	13228	14083
8790	13245	14099
8800	13263	14115
8810	13281	14131
8820	13298	14147
*8830	13316	14163
8840	13334	14179
8850	13352	14195
8860	13369	14211
8870	13387	14227
8880	13405	14244
8890	13422	14260
8900	13440	14276
8910	13458	14292
8920	13476	14308
8930	13493	14324
8940	13511	14340
8950	13529	14356
8960	13547	14372
8970	13564	14388
8980	13582	14404
8990	13600	14420
9000	13618	14436
9010	13636	14452
9020	13653	14468
9030	13671	14484
9040	13689	14500
9050	13707	14516
9060	13725	14532
9070	13743	14548
9080	13760	14564
9090	13778	14580
9100	13796	14596
9110	13814	14612
9120	13832	14628
9130	13850	14645
9140	13868	14661
9150	13886	14677
9160	13903	14693
9170	13921	14709
9180	13939	14725
9190	13957	14741
9200	13975	14757
9210	13993	14773
9220	14011	14789
9230	14029	14805
9240	14047	14821
9250	14065	14837
9260	14083	14853
9270	14101	14869
9280	14119	14885
9290	14137	14901
**9300	14155	14917

Table 17

Operating Conditions		I-1	I-2	I-3	I-4	I-5
Pilot (pounds)		170	170	155	160	170
Copilot (pounds)		180	150	180	160	155
Passengers - F.S. 168						
	Left	150	140	200	100	200
	Right	130	160	130	120	---
Passengers - F.S. 210						
	Left	160	150	---	130	150
	Right	100	170	---	170	160
Passenger - F.S. 243		---	100	---	180	120
Baggage (pounds)		180	90	165	180	130
Fuel (gallons)		280	260	310	270	210
Oil			Full service for all flights			

6701. What is the CG in inches aft of datum for Operating Conditions I-1, Table 17? (See data given in Tables 15 and 16, pages 92 and 93.)

1—154.4 inches.
2—156.0 inches.
3—158.3 inches.
4—159.4 inches.

6702. What is the CG in inches aft of datum for Operating Conditions I-2, Table 17? (See data given in Tables 15 and 16, pages 92 and 93.)

1—152.3 inches.
2—154.6 inches.
3—156.5 inches.
4—157.4 inches.

6703. What is the CG in inches aft of datum for Operating Conditions I-3, Table 17? (See data given in Tables 15 and 16, pages 92 and 93.)

1—150.9 inches.
2—151.8 inches.
3—153.1 inches.
4—155.7 inches.

6704. What is the CG in inches aft of datum for Operating Conditions I-4, Table 17? (See data given in Tables 15 and 16, pages 92 and 93.)

1—151.6 inches.
2—154.0 inches.
3—155.1 inches.
4—156.3 inches.

6705. What is the CG in inches aft of datum for Operating Conditions I-5, Table 17? (See data given in Tables 15 and 16, pages 92 and 93.)

1—154.8 inches.
2—156.1 inches.
3—157.7 inches.
4—159.0 inches.

6706. How should you arrange the loading of passengers and fuel so the airplane is within maximum takeoff limits? (See data given in Tables 15 and 16, pages 92 and 93.)

Pilot	170 lb.
Copilot	180 lb.
Passenger No. 1	180 lb.
Passenger No. 2	200 lb.
Oil	24 lb.

1—Assign passengers to seats at F.S. 168 and limit fuel to 367 gal.
2—Assign passenger No. 1 to seat at F.S. 168, passenger No. 2 to seat at F.S. 210, and limit fuel to 362 gal.
3—Assign both passengers to seats at F.S. 210 and load 384 gal. of fuel.
4—Limit fuel to 352 gal. and assign both passengers to seats at F.S. 210.

6707. Which loading arrangement of passengers, baggage, and fuel does not exceed the maximum takeoff limits? (See data given in Tables 15 and 16, pages 92 and 93.)

Pilot	220 lb.
Copilot	205 lb.
Passenger No. 1	230 lb.
Passenger No. 2	210 lb.
Oil	24 lb.

1—Passengers in seats at F.S. 168, 323 gal. of fuel, and 60 lb. of baggage in aft compartment.
2—Passenger No. 1 in seat at F.S. 210, passenger No. 2 in seat at F.S. 243, 323 gal. of fuel, and 90 lb. of baggage in aft compartment.
3—Passengers in seats at F.S. 243, 334 gal. of fuel, and 60 lb. of baggage in aft compartment.
4—Passengers in seats at F.S. 210, 323 gal. of fuel, and 60 lb. of baggage in aft compartment.

Table 18

Operating Conditions		I-6	I-7	I-8	I-9	I-10
Pilot (pounds)		155	180	190	160	180
Copilot (pounds)		150	160	160	160	150
Passengers - F.S. 168						
▨	**Left**	130	100	150	---	150
▨	**Right**	140	100	200	---	160
Passengers - F.S. 210						
▨	**Left**	150	160	---	150	100
▨	**Right**	150	170	---	170	100
Passenger - F.S. 243		---	110	---	170	110
Baggage (pounds)		85	45	180	100	80
Fuel (gallons)		290	270	275	220	260
Oil		▨	**Full service for all flights**			▨

708. What is the CG in inches aft of datum for Operating onditions I–6, Table 18? (See data given in Tables 15 nd 16, pages 92 and 93.)

—151.2 inches.
—153.6 inches.
—155.5 inches.
—157.1 inches.

709. What is the CG in inches aft of datum for Operating onditions I–7, Table 18? (See data given in Tables 15 nd 16, pages 92 and 93.)

—150.3 inches.
—151.8 inches.
—153.9 inches.
—155.1 inches.

710. What is the CG in inches aft of datum for Operating onditions I–8, Table 18? (See data given in Tables 15 nd 16, pages 92 and 93.)

—147.3 inches.
—149.1 inches.
—150.8 inches.
—152.9 inches.

711. What is the CG in inches aft of datum for perating Conditions I–9, Table 18? (See data given in ables 15 and 16, pages 92 and 93.)

1—154.9 inches.
2—156.1 inches.
3—157.9 inches.
4—158.8 inches.

712. What is the CG in inches aft of datum for Operating onditions I–10, Table 18? (See data given in Tables 15 nd 16, pages 92 and 93.)

1—151.1 inches.
2—153.8 inches.
3—155.2 inches.
4—156.9 inches.

6713. Which loading arrangement of passengers, baggage, and fuel exceeds the maximum takeoff limits? (See data given in Tables 15 and 16, pages 92 and 93.)

Pilot	275 lb.
Copilot	265 lb.
Passenger No. 1	174 lb.
Passenger No. 2	165 lb.
Oil	24 lb.

1—Passengers in seats at F.S. 168; 330 gal. of fuel; no baggage.
2—Passengers in seats at F.S. 210; 315 gal. of fuel; 102 lb. of baggage in aft compartment.
3—Passenger weighing 174 lb. in seat at F.S. 168; passenger weighing 165 lb. in seat at F.S. 210; 305 gal. of fuel; 169 lb. of baggage in aft compartment.
4—Passenger weighing 174 lb. in seat at F.S. 210; passenger weighing 165 lb. in seat at F.S. 243; 310 gal. of fuel; 135 lb. of baggage in aft compartment.

6714. Which loading arrangement does not exceed the maximum takeoff limits? (See data given in Tables 15 and 16, pages 92 and 93.)

Pilot	170 lb.
Copilot	150 lb.
Oil	24 lb.

1—Service with 384 gal. of fuel.
2—Service with 290 gal. of fuel and load 150 lb. of baggage in the aft compartment.
3—Service with 360 gal. of fuel and secure 200 lb. of cargo in the seats at F.S. 168.
4—Service with 375 gal. of fuel and secure 150 lb. of cargo in the seats at F.S. 168.

6715. How does deplaning two passengers and baggage affect the weight and balance condition? (See data given in Tables 15 and 16, pages 92 and 93.)

Weight and Mom./100 prior to deplaning
passengers and baggage .... 8,620 lb.
and 13,800 lb./in.
Deplaned passengers (F.S. 168) .... 360 lb.
Deplaned baggage (aft comp.) .... 50 lb.

1—Weight is reduced but CG remains the same.
2—CG shifts 1 inch forward and is within limits.
3—The new CG is 161.1 inches aft of datum and out of limits.
4—CG shifts 1.1 inches aft and is within limits.

6716. An airplane is loaded with the CG aft of the aft limit. What effect will this have on controllability?

1—Stall and spin recovery may be difficult or impossible.
2—A stall will occur at a higher indicated airspeed due to the greater down loading on the elevator.
3—A power-off, full-stall landing is more difficult because of the increased ground effect on the elevator.
4—A stall will occur at a lower airspeed, but recovery will be easier because of reduced wing loading.

6717. What is characteristic of the indicated airspeed if the CG is at the most forward allowable position and constant power and altitude are maintained?

1—Indicated airspeed will be greater than it would be with the CG in the most rearward allowable position.
2—Indicated airspeed will be less than it would be with the CG in the most rearward allowable position.
3—There is no relationship between CG location and indicated airspeed.
4—Indicated airspeed will be less than it would be at the most rearward CG position, but not less than it would be with the CG midway between the forward and aft limits.

6718. An airplane is loaded with the CG at the aft limit. What are the performance characteristics compared with the CG at the forward limit?

1—The aft CG provides the highest stall speed and cruising speed.
2—The aft CG provides the lowest stalling speed, the highest cruising speed, and least stability.
3—Stalling speed and pitch stability are the only factors affected by CG location.
4—Cruising speed is lower because of more induced drag created by the elevator or stabilizer being required to provide more lift with an aft CG.

6719. An airplane is loaded with the CG within the approved limits. Compared with the static weight of the loaded airplane, during cruise level flight, how much lift is the wing required to produce?

1—Same as the static weight of the airplane.
2—Less than static weight of the airplane because the stabilizer provides some lift.
3—More than the static weight of the airplane.
4—Less than the static weight of the airplane only if the CG is at the aft limit.

6720. What effect does an uphill runway slope have upon takeoff performance?

1—Increases takeoff distance.
2—Increases takeoff speed.
3—Decreases takeoff distance.
4—Decreases takeoff speed.

6721. What are the empty weight and balance currency requirements for airplanes used in air taxi service?

1—The empty weight and CG of multiengine and single-engine airplanes must have been calculated from an actual weighing within the previous 24 calendar months.
2—The empty weight and CG of multiengine airplanes must have been calculated from an actual weighing within the previous 36 calendar months.
3—The empty weight and CG must have been calculated from an actual weighing within the previous 24 calendar months unless the original Airworthiness Certificate was issued within the previous 36 calendar months.
4—The empty weight and CG must have been calculated from an actual weighing within the previous 36 calendar months only if fixed equipment has been removed or installed.

6722. Which has the effect of increasing load factor?

1—Vertical gusts.
2—Increased airplane weight.
3—Increased air density.
4—Rearward CG location.

6723. An airplane is flying at a constant flight level and at a power schedule which produces maximum air miles per pound of fuel. In this event, as the weight of the airplane reduces, engine power setting or fuel flow is

1—held constant to simplify fuel consumption computations.
2—reduced to maintain the best constant airspeed.
3—reduced to maintain the best L/D ratio flight conditions.
4—increased to allow flight at maximum efficient airspeed relative to tailplane drag.

24. The angle of attack which produces the highest
—drag ratio

—remains constant as weight is changed, but decreases as altitude is increased.
—increases as weight or altitude is increased.
—remains constant regardless of weight or altitude.
—remains constant as altitude is changed, but decreases as weight is reduced.

25. Mach number is commonly defined as the

—ratio of equivalent airspeed to the speed of sound.
—speed of sound under conditions of standard pressure and temperature.
—calibrated airspeed corrected for position and instrument error.
—ratio of true airspeed to the speed of sound.

26. Under which condition during the landing roll are main wheel brakes at maximum effectiveness?

—When wing lift has been reduced.
—At high groundspeeds.
—When the wheels are locked and skidding.
—When the emergency airbrakes are applied.

27. The primary purpose of high lift devices is to
rease the

—L/D_{max}.
—lift at slow speeds.
—drag and reduce airspeed.
—approach and landing speeds.

28. The true airspeed at which an airplane stalls varies
h

—load factor, weight, and density altitude.
—load factor and angle of attack.
—density altitude, weight, and angle of attack.
—groundspeed, load factor, and density altitude.

29. In comparing a straight wing with a sweptback
g of the same wing area and wing loading, the
eptback wing has the advantage of

—lower stalling speed.
—greater mean aerodynamic chord.
—increased longitudinal stability.
—higher critical Mach number.

30. Which adverse stability characteristic is caused by
eepback?

—Increase of dutchroll tendency.
—Increase of longitudinal static stability.
—Increase of Mach tuck tendency.
—Increase of critical Mach number.

6731. An airplane is descending at a constant Mach .6. What would occur regarding the true airspeed?

1—Remains constant.
2—Decreases as pressure increases.
3—Decreases as altitude decreases.
4—Increases as temperature increases.

6732. What effect, if any, would a change in ambient temperature or air density have on gas turbine engine performance?

1—As air density decreases, thrust increases.
2—As temperature increases, thrust increases.
3—No change occurs with either temperature or density altitude changes.
4—As temperature increases, thrust decreases.

6733. The use of a slot in the leading edge of the wing enables the airplane to land at a slower speed because it

1—changes the camber of the wing.
2—increases the ground effect.
3—decelerates the upper surface boundary layer air.
4—delays the stall to a higher angle of attack.

6734. Which maximum range factor decreases as weight decreases?

1—Specific range.
2—Maximum range angle of attack.
3—Maximum range altitude.
4—Maximum range airspeed.

6735. What is a characteristic of the constant Mach cruise control procedure?

1—Thrust is reduced as aircraft weight decreases.
2—True airspeed decreases as OAT increases.
3—EPR is increased as OAT increases.
4—EPR is increased as aircraft weight decreases.

6736. What is the primary function of the leading edge flaps in landing configuration during the flare before touchdown?

1—Increase profile drag.
2—Prevent flow separation.
3—Prevent ground effect.
4—Decrease rate of sink.

6737. Which condition has the effect of reducing critical engine failure speed?

1—Slush on runway or inoperative antiskid.
2—High gross weight.
3—Dry runway with uphill slope.
4—High-density altitude.

Table 19

Flight Planning Conditions		J-1
Total trip distance (NM)		750
Takeoff weight (pounds)		8,000
Takeoff airport P.A. (MSL)		S.L.
Climb:	Average OAT (°C)	ISA+5°C.
Enroute:	Cruise P.A. (MSL)	15,000
	Average OAT (°C)	ISA+0°C.
	Cruise TAS (Kts.)	220
	Wind factor (Kts.)	+25
Descent:	Airspeed (KCAS)	169
Destination airport P.A. (MSL)		4,000

NOTE: Questions 6738, 6739, and 6740 are based on flight planning conditions J–1, Table 19. Use performance charts, Figures 42, 43, and 44 on pages 99 and 101. No reserve or alternate airport fuel computations are required.

6738. (See NOTE above.) What is the total ETE from takeoff to landing?

1—3 hours 15 minutes.
2—3 hours 10 minutes.
3—3 hours 5 minutes.
4—3 hours.

6739. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,600 pounds.
2—1,500 pounds.
3—1,400 pounds.
4—1,300 pounds.

6740. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—40.4 NAM/100.
2—46.2 NAM/100.
3—47.9 NAM/100.
4—50.8 NAM/100.

Table 20

Flight Planning Conditions		J-2
Total trip distance (NM)		565
Takeoff weight (pounds)		7,000
Takeoff airport P.A. (MSL)		4,000
Climb:	Average OAT (°C)	ISA
Enroute:	Cruise P.A. (MSL)	FL 180
	Average OAT (°C)	ISA +0°C.
	Cruise TAS (Kts.)	222
	Wind factor (Kts.)	-20
Descent:	Airspeed (KCAS)	169
Destination airport P.A. (MSL)		6,000

NOTE: Questions 6741, 6742, and 6743 are based on flight planning conditions J–2, Table 20. Use performance charts, Figures 42, 43, and 44 on pages 99 and 101. No reserve or alternate airport fuel computations are required.

6741. (See NOTE above.) What is the total ETE from takeoff to landing?

1—2 hours 50 minutes.
2—2 hours 44 minutes.
3—2 hours 40 minutes.
4—2 hours 35 minutes.

6742. (See NOTE above.) What is the total fuel require from takeoff to landing?

1—1,350 pounds.
2—1,235 pounds.
3—1,140 pounds.
4—1,050 pounds.

6743. (See NOTE above.) What is the specific range nautical air miles per 100 pounds of fuel (NAM/100) the en route portion of the flight at cruising altitude?

1—46.1 NAM/100.
2—48.6 NAM/100.
3—50.7 NAM/100.
4—52.1 NAM/100.

MAXIMUM CRUISE POWER

ISA+0 - 1900 RPM

PRESSURE ALTITUDE (FEET)	IOAT.		TORQUE FT-LB		FUEL FLOW LB/HR		AIRSPEED - KNOTS					
							7000 LB		8000 LB		9000 LB	
	(C)	(F)	LEFT	RIGHT	LEFT	RIGHT	CAS	TAS	CAS	TAS	CAS	TAS
0	21	69	1192	1192	326	321	207	207	206	205	204	204
2000	17	62	1192	1192	318	312	204	211	203	209	202	208
4000	13	55	1192	1192	311	305	202	215	201	213	200	212
6000	9	49	1189	1192	305	300	200	219	199	218	198	216
8000	5	42	1133	1182	290	293	196	221	195	220	193	218
10000	1	35	1075	1123	274	278	190	221	190	221	188	218
12000	-3	27	1014	1062	258	262	184	221	184	221	182	218
14000	-7	20	959	1005	243	247	179	222	178	220	176	218
16000	-11	13	904	948	230	233	173	222	172	220	169	217
18000	-15	6	854	897	217	221	167	222	166	220	163	216
20000	-19	-1	804	845	205	209	162	222	160	219	156	214
22000	-23	-9	758	797	194	197	156	221	154	218	149	211
24000	-27	-16	712	749	183	186	151	221	147	216	141	207

Figure 42

TWIN ENGINE CRUISE CLIMB

CRUISE CLIMB SPEED 140 KTS (CAS)

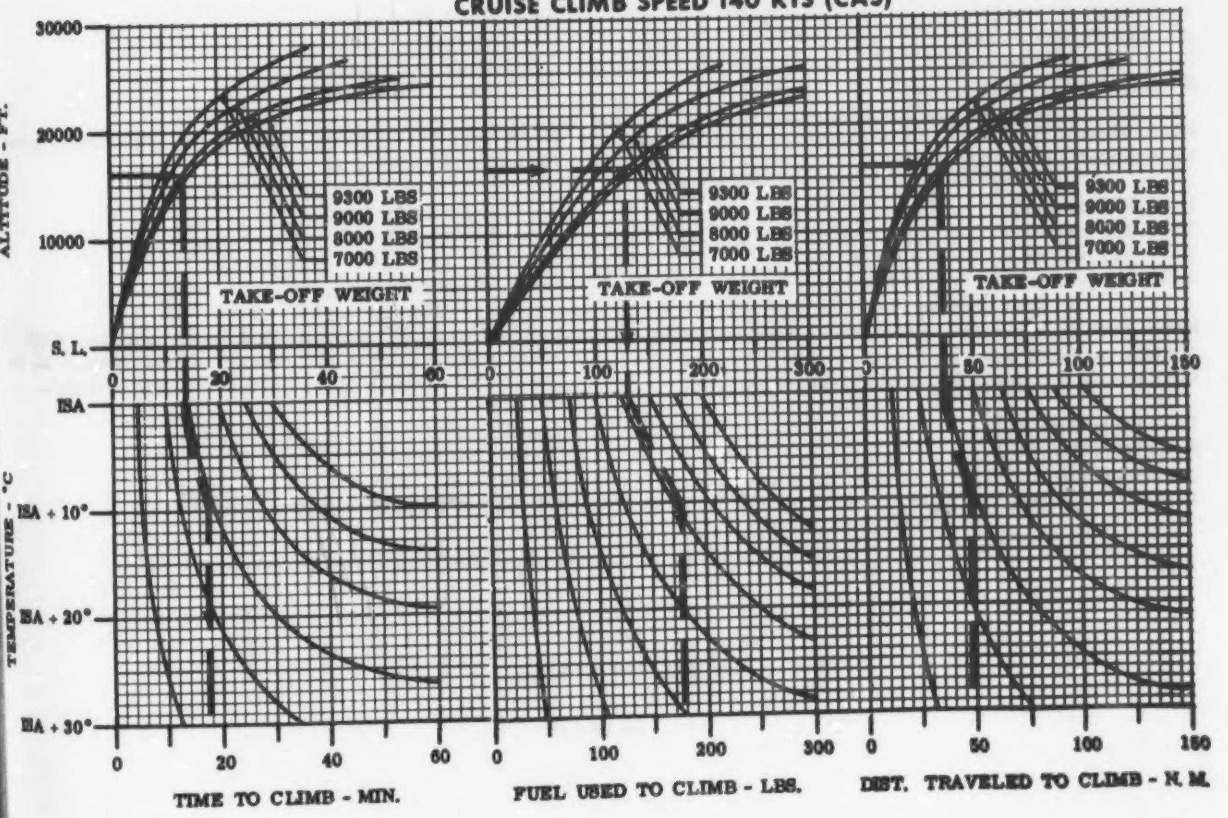


Figure 43

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Table 21

Flight Planning Conditions		J-3
Total trip distance (NM)		727
Takeoff weight (pounds)		8,000
Takeoff airport P.A. (MSL)		3,000
Climb:	Average OAT (°C)	ISA +15°C
Enroute:	Cruise P.A. (MSL)	17,000
	Average OAT (°C)	ISA +0°C.
	Cruise TAS (Kts.)	220
	Wind factor (Kts.)	-18
Descent:	Airspeed (KCAS)	169
Destination airport P.A. (MSL)		2,000

NOTE: Questions 6744, 6745, and 6746 are based on flight planning conditions J-3, Table 21. Use performance charts, Figures 42, 43, and 44 on pages 99 and 101. No reserve or alternate airport fuel computations are required.

6744. (See NOTE above.) What is the total ETE from takeoff to landing?

1—3 hours 51 minutes.
2—3 hours 46 minutes.
3—3 hours 41 minutes.
4—3 hours 33 minutes.

6745. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,765 pounds.
2—1,660 pounds.
3—1,545 pounds.
4—1,410 pounds.

6746. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—44.9 NAM/100.
2—46.5 NAM/100.
3—48.9 NAM/100.
4—50.7 NAM/100.

Table 22

Flight Planning Conditions		J-4
Total trip distance (NM)		538
Takeoff weight (pounds)		8,000
Takeoff airport P.A. (MSL)		2,000
Climb:	Average OAT (°C)	ISA +20°C
Enroute:	Cruise P.A. (MSL)	12,000
	Average OAT (°C)	ISA +0°C.
	Cruise TAS (Kts.)	221
	Wind factor (Kts.)	+19
Descent:	Airspeed (KCAS)	169
Destination airport P.A. (MSL)		S.L.

NOTE: Questions 6747, 6748, and 6749 are based on flight planning conditions J-4, Table 22. Use performance charts, Figures 42, 43, and 44 on pages 99 and 101. No reserve or alternate airport fuel computations are required.

6747. (See NOTE above.) What is the total ETE from takeoff to landing?

1—2 hours 31 minutes.
2—2 hours 26 minutes.
3—2 hours 21 minutes.
4—2 hours 15 minutes.

6748. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,480 pounds.
2—1,395 pounds.
3—1,300 pounds.
4—1,195 pounds.

6749. (See NOTE above.) What is the specific range i nautical air miles per 100 pounds of fuel (NAM/100) fo the en route portion of the flight at cruising altitude?

1—42.5 NAM/100.
2—44.0 NAM/100.
3—45.1 NAM/100.
4—46.1 NAM/100.

DESCENT

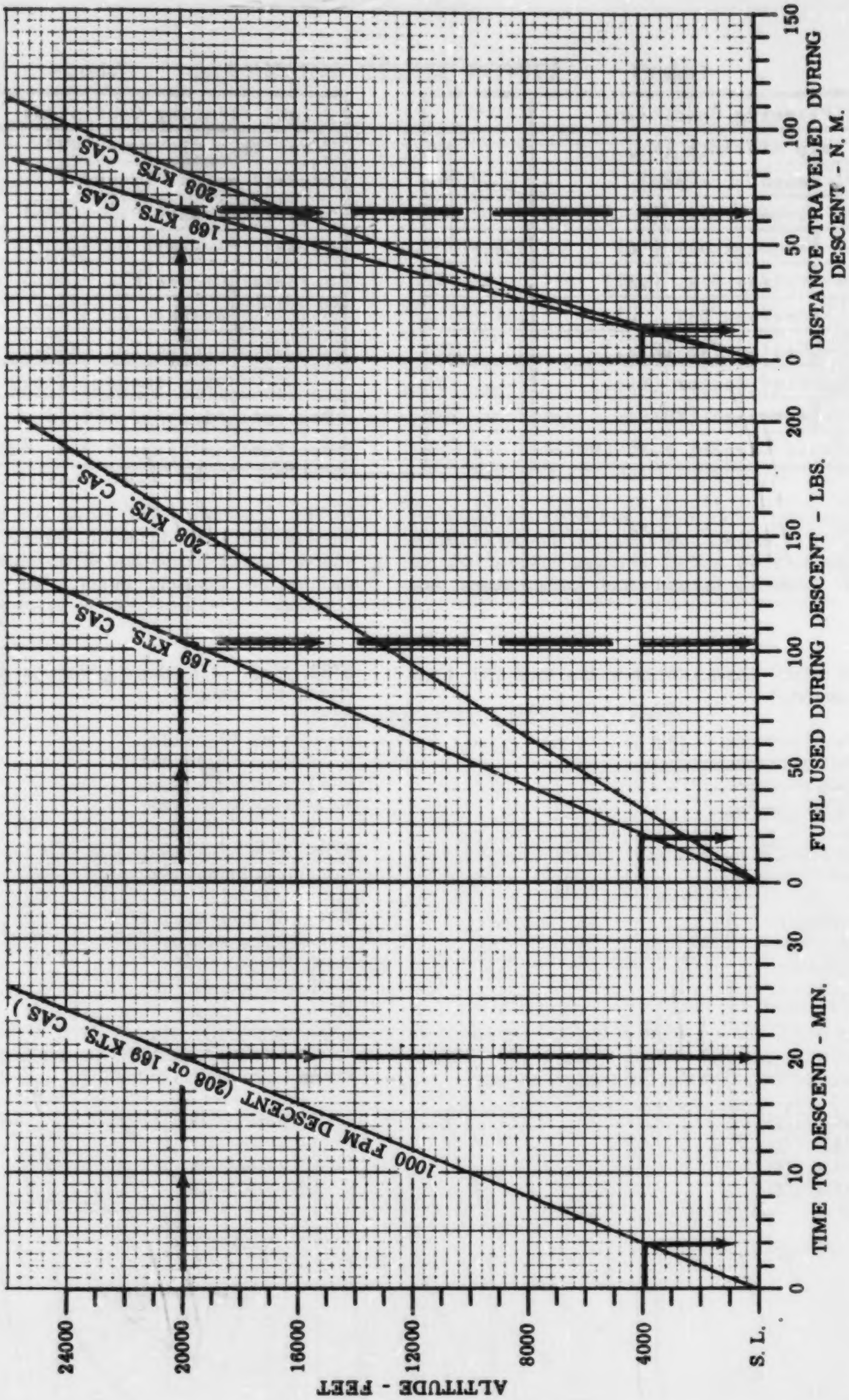

Figure 44

Table 23

Flight Planning Conditions		J-5
Total trip distance (NM)		800
Takeoff weight (pounds)		9,000
Takeoff airport P.A. (MSL)		2,000
Climb:	Average OAT (°C)	ISA +10°C
Enroute:	Cruise P.A. (MSL)	16,000
	Average OAT (°C)	ISA +10°C
	Cruise TAS (Kts.)	209
	Wind factor (Kts.)	-20
Descent:	Airspeed (KCAS)	208
Destination airport P.A. (MSL)		3,000

NOTE: Questions 6750, 6751, and 6752 are based on flight planning conditions J-5, Table 23. Use performance charts, Figures 45, 46, and 47 on pages 103 and 105. No reserve or alternate airport fuel computations are required.

6750. (See NOTE above.) What is the total ETE from takeoff to landing?

1—4 hours 18 minutes.
2—4 hours 12 minutes.
3—4 hours 6 minutes.
4—3 hours 55 minutes.

6751. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,975 pounds.
2—1,860 pounds.
3—1,700 pounds.
4—1,510 pounds.

6752. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—45.2 NAM/100.
2—46.9 NAM/100.
3—47.7 NAM/100.
4—48.7 NAM/100.

Table 24

Flight Planning Conditions		J-6
Total trip distance (NM)		850
Takeoff weight (pounds)		9,000
Takeoff airport P.A. (MSL)		5,000
Climb:	Average OAT (°C)	ISA +15°C
Enroute:	Cruise P.A. (MSL)	FL 190
	Average OAT (°C)	ISA +10°C
	Cruise TAS (Kts.)	206
	Wind factor (Kts.)	+35
Descent:	Airspeed (KCAS)	208
Destination airport P.A. (MSL)		S.L.

NOTE: Questions 6753, 6754, and 6755 are based on flight planning conditions J-6, Table 24. Use performance charts, Figures 45, 46, and 47 on pages 103 and 105. No reserve or alternate airport fuel computations are required.

6753. (See NOTE above.) What is the total ETE from takeoff to landing?

1—3 hours 40 minutes.
2—3 hours 47 minutes.
3—3 hours 52 minutes.
4—3 hours 35 minutes.

6754. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,515 pounds.
2—1,400 pounds.
3—1,290 pounds.
4—1,620 pounds.

6755. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—62.8 NAM/100.
2—57.4 NAM/100.
3—52.2 NAM/100.
4—50.1 NAM/100.

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MAXIMUM CRUISE POWER

ISA+10 - 1900 RPM

PRESSURE ALTITUDE (FEET)	IOAT.		TORQUE FT-LB		FUEL FLOW LB/HR		AIRSPEED - KNOTS					
							7000 LB		8000 LB		9000 LB	
	(C)	(F)	LEFT	RIGHT	LEFT	RIGHT	CAS	TAS	CAS	TAS	CAS	TAS
0	31	87	1181	1192	324	320	205	209	204	207	203	208
2000	27	80	1144	1192	309	312	202	212	201	210	200	209
4000	23	73	1106	1163	295	300	197	213	196	212	195	211
6000	19	66	1058	1113	281	285	192	214	191	213	190	211
8000	15	59	1008	1063	267	271	187	215	187	214	185	212
10000	11	52	958	1011	253	257	182	215	181	214	179	212
12000	7	45	905	956	239	243	177	216	175	214	173	212
14000	3	38	856	905	225	229	171	216	169	214	167	211
16000	-1	30	807	856	213	216	165	216	164	214	160	209
18000	-5	23	764	811	201	205	160	216	158	214	154	208
20000	-9	16	719	765	190	193	154	216	152	212	146	204
22000	-13	9	677	722	179	183	149	215	145	210	139	201
24000	-17	1	635	678	169	172	142	213	137	206	129	194

Figure 45

TWIN ENGINE CRUISE CLIMB

CRUISE CLIMB SPEED 140 KTS (CAS)

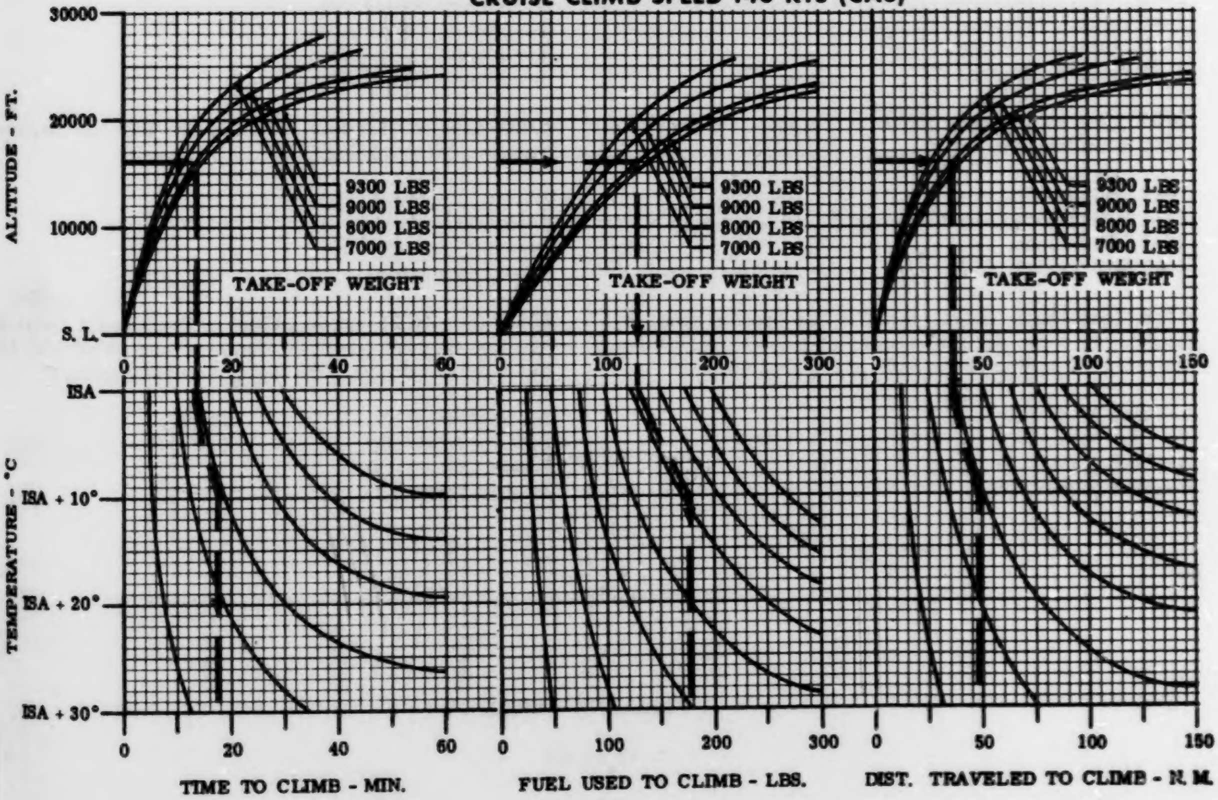


Figure 46

Table 25

Flight Planning Conditions		J-7
Total trip distance (NM)		435
Takeoff weight (pounds)		8,000
Takeoff airport P.A. (MSL)		S.L.
Climb:	Average OAT (°C)	ISA +10°C
Enroute:	Cruise P.A. (MSL)	9,000
	Average OAT (°C)	ISA +10°C
	Cruise TAS (Kts.)	214
	Wind factor (Kts.)	-17
Descent:	Airspeed (KCAS)	169
Destination airport P.A. (MSL)		2,500

NOTE: Questions 6756, 6757, and 6758 are based on flight planning conditions J–7, Table 25. Use performance charts, Figures 45, 46, and 47 on pages 103 and 105. No reserve or alternate airport fuel computations are required.

6756. (See NOTE above.) What is the total ETE from takeoff to landing?

1—2 hours 25 minutes.
2—2 hours 19 minutes.
3—2 hours 14 minutes.
4—2 hours 8 minutes.

6757. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,350 pounds.
2—1,270 pounds.
3—1,165 pounds.
4—1,040 pounds.

6758. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—36.1 NAM/100.
2—37.7 NAM/100.
3—38.8 NAM/100.
4—40.8 NAM/100.

Table 26

Flight Planning Conditions		J-8
Total trip distance (NM)		677
Takeoff weight (pounds)		9,000
Takeoff airport P.A. (MSL)		3,000
Climb:	Average OAT (°C)	ISA
Enroute:	Cruise P.A. (MSL)	FL 190
	Average OAT (°C)	ISA +10°C
	Cruise TAS (Kts.)	206
	Wind factor (Kts.)	-27
Descent:	Airspeed (KCAS)	169
Destination airport P.A. (MSL)		S.L.

NOTE: Questions 6759, 6760, and 6761 are based on flight planning conditions J–8, Table 26. Use performance charts, Figures 45, 46, and 47 on pages 103 and 105. No reserve or alternate airport fuel computations are required.

6759. (See NOTE above.) What is the total ETE from takeoff to landing?

1—3 hours 36 minutes.
2—3 hours 40 minutes.
3—3 hours 45 minutes.
4—3 hours 50 minutes.

6760. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,410 pounds.
2—1,500 pounds.
3—1,585 pounds.
4—1,735 pounds.

6761. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—53.4 NAM/100.
2—52.2 NAM/100.
3—48.3 NAM/100.
4—45.3 NAM/100.

DESCENT

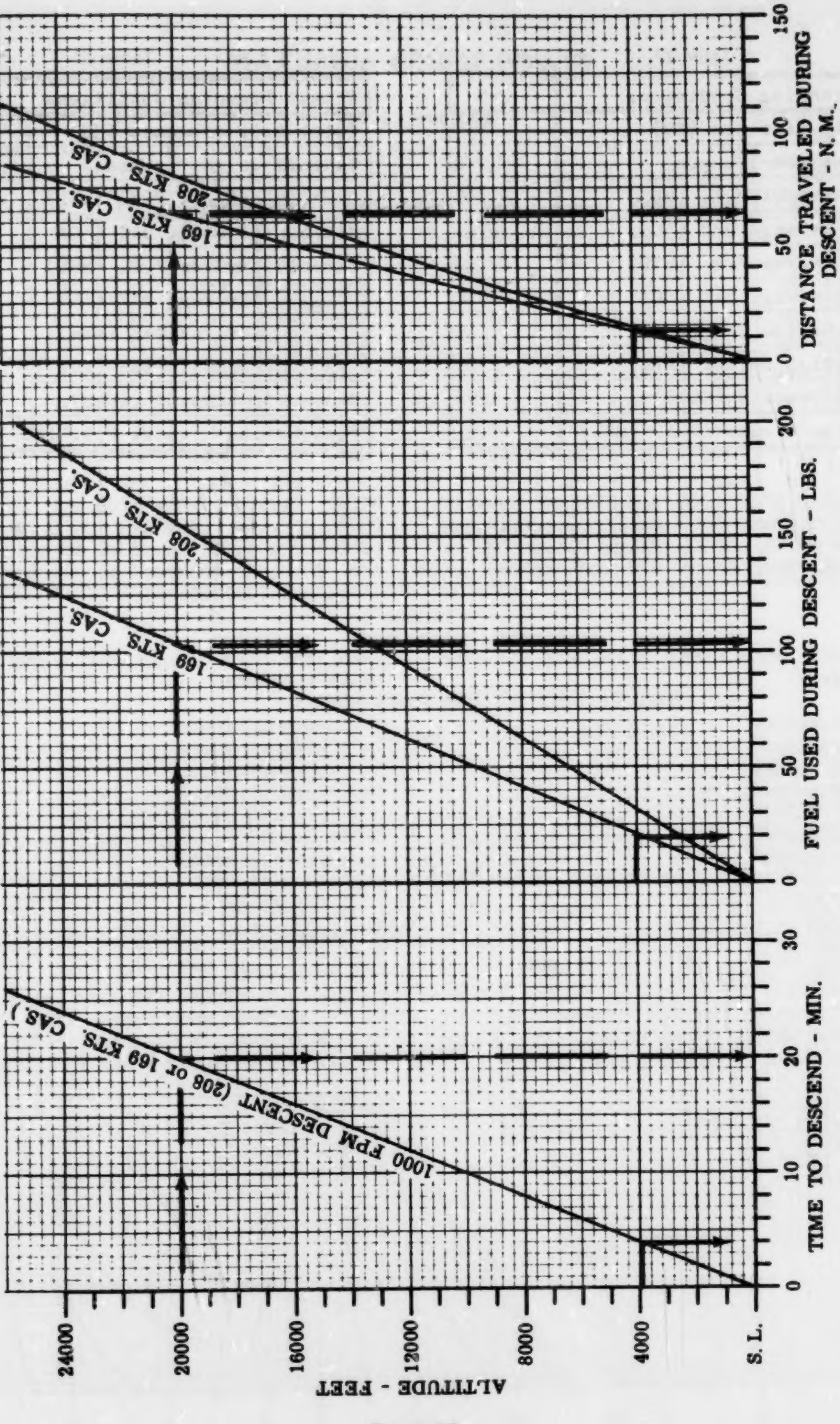


Figure 47

Table 27

Flight Planning Conditions		J-9
Total trip distance (NM)		650
Takeoff weight (pounds)		8,000
Takeoff airport P.A. (MSL)		4,000
Climb:	Average OAT (°C)	ISA +5°C.
Enroute:	Cruise P.A. (MSL)	14,000
	Average OAT (°C)	ISA -10°C.
	Cruise TAS (Kts.)	226
	Wind factor (Kts.)	-25
Descent:	Airspeed (KCAS)	208
Destination airport P.A. (MSL)		S.L.

NOTE: Questions 6762, 6763, and 6764 are based on flight planning conditions J-9, Table 27. Use performance charts, Figures 48, 49, and 50 on pages 107 and 109. No reserve or alternate airport fuel computations are required.

6762. (See NOTE above.) What is the total ETE from takeoff to landing?

1—2 hours 59 minutes.
2—3 hours 8 minutes.
3—3 hours 13 minutes.
4—3 hours 18 minutes.

6763. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,610 pounds.
2—1,705 pounds.
3—1,825 pounds.
4—1,900 pounds.

6764. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—42.7 NAM/100.
2—40.3 NAM/100.
3—38.7 NAM/100.
4—37.9 NAM/100.

Table 28

Flight Planning Conditions		J-10
Total trip distance (NM)		925
Takeoff weight (pounds)		9,000
Takeoff airport P.A. (MSL)		S.L.
Climb:	Average OAT (°C)	ISA +5°C
Enroute:	Cruise P.A. (MSL)	FL 210
	Average OAT (°C)	ISA -10°C
	Cruise TAS (Kts.)	221
	Wind factor (Kts.)	+40
Descent:	Airspeed (KCAS)	208
Destination airport P.A. (MSL)		5,000

NOTE: Questions 6765, 6766, and 6767 are based on flight planning conditions J-10, Table 28. Use performance charts, Figures 48, 49, and 50 on pages 107 and 109. No reserve or alternate airport fuel computations are required.

6765. (See NOTE above.) What is the total ETE from takeoff to landing?

1—3 hours 51 minutes.
2—3 hours 45 minutes.
3—3 hours 40 minutes.
4—3 hours 36 minutes.

6766. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,750 pounds.
2—1,490 pounds.
3—1,570 pounds.
4—1,660 pounds.

6767. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—60.4 NAM/100.
2—57.6 NAM/100.
3—55.4 NAM/100.
4—51.0 NAM/100.

MAXIMUM CRUISE POWER

ISA-10 - 1900 RPM

PRESSURE ALTITUDE (FEET)	IOAT.		TORQUE FT-LB		FUEL FLOW LB/HR		AIRSPEED - KNOTS					
							7000 LB		8000 LB		9000 LB	
	(C)	(F)	LEFT	RIGHT	LEFT	RIGHT	CAS	TAS	CAS	TAS	CAS	TAS
0	10	51	1192	1192	326	321	208	204	207	203	206	202
2000	7	44	1192	1192	318	313	208	208	204	207	204	206
4000	3	37	1192	1192	312	305	204	212	202	211	201	210
6000	-1	30	1192	1192	306	300	202	216	200	215	199	214
8000	-5	24	1192	1192	300	295	199	221	198	219	197	218
10000	-8	17	1192	1192	295	290	197	225	196	224	195	222
12000	-12	10	1128	1170	278	282	192	227	192	226	190	224
14000	-16	3	1065	1106	263	266	187	227	186	226	184	224
16000	-20	-4	1004	1043	248	251	181	227	180	226	178	223
18000	-24	-12	950	987	234	237	175	227	174	226	172	223
20000	-28	-19	896	931	221	224	169	227	168	225	165	221
22000	-32	-26	846	879	209	212	164	227	162	225	158	220
24000	-36	-33	798	828	197	200	158	227	156	224	151	217

Figure 48

TWIN ENGINE CRUISE CLIMB

CRUISE CLIMB SPEED 140 KTS (CAS)

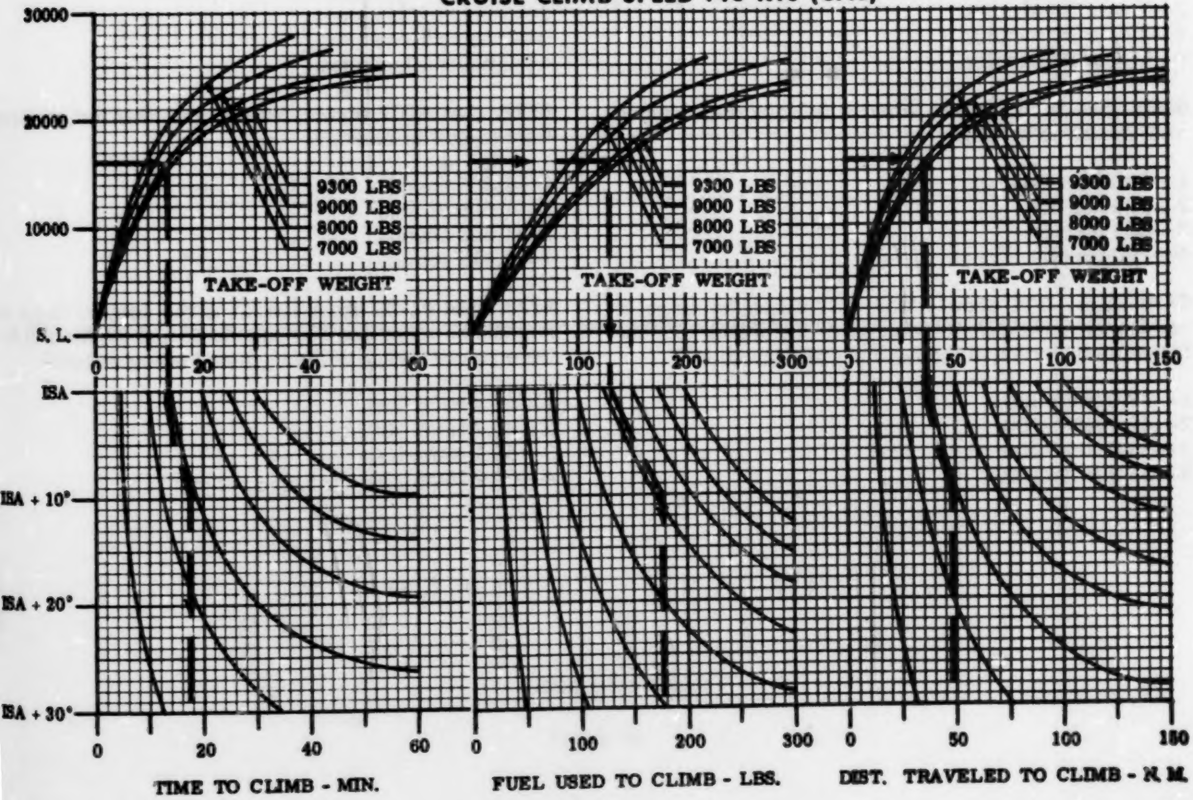


Figure 49

Table 29

Flight Planning Conditions		J11
Total trip distance (NM)		375
Takeoff weight (pounds)		7,000
Takeoff airport P.A. (MSL)		S.L.
Climb:	Average OAT (°C)	ISA +20°C
Enroute:	Cruise P.A. (MSL)	10,000
	Average OAT (°C)	ISA -10°C
	Cruise TAS (Kts.)	214
	Wind factor (Kts.)	+12
Descent:	Airspeed (KCAS)	169
Destination airport P.A. (MSL)		1,500

NOTE: Questions 6768, 6769, and 6770 are based on flight planning conditions J-11, Table 29. Use performance charts, Figures 48, 49, and 50 on pages 107 and 109. No reserve or alternate airport fuel computations are required.

6768. (See NOTE above.) What is the total ETE from takeoff to landing?

1—1 hour 43 minutes.
2—1 hour 34 minutes.
3—1 hour 30 minutes.
4—1 hour 27 minutes.

6769. (See NOTE above.) What is the total fuel required from takeoff to landing.

1—1,020 pounds.
2—910 pounds.
3—865 pounds.
4—790 pounds.

6770. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—37.0 NAM/100.
2—42.1 NAM/100.
3—35.0 NAM/100.
4—33.9 NAM/100.

Table 30

Flight Planning Conditions		J12
Total trip distance (NM)		798
Takeoff weight (pounds)		9,000
Takeoff airport P.A. (MSL)		5,000
Climb:	Average OAT (°C)	ISA +5°C
Enroute:	Cruise P.A. (MSL)	FL 200
	Average OAT (°C)	ISA -10°C
	Cruise TAS (Kts.)	221
	Wind factor (Kts.)	+47
Descent:	Airspeed (KCAS)	208
Destination airport P.A. (MSL)		1,500

NOTE: Questions 6771, 6772, and 6773 are based on flight planning conditions J-12, Table 30. Use performance charts, Figures 48, 49, and 50 on pages 107 and 109. No reserve or alternate airport fuel computations are required.

6771. (See NOTE above.) What is the total ETE from takeoff to landing?

1—3 hours 4 minutes.
2—3 hours 20 minutes.
3—3 hours 16 minutes.
4—3 hours 10 minutes.

6772. (See NOTE above.) What is the total fuel required from takeoff to landing?

1—1,305 pounds.
2—1,625 pounds.
3—1,550 pounds.
4—1,415 pounds.

6773. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel (NAM/100) for the en route portion of the flight at cruising altitude?

1—46.4 NAM/100.
2—49.7 NAM/100.
3—55.1 NAM/100.
4—60.2 NAM/100.

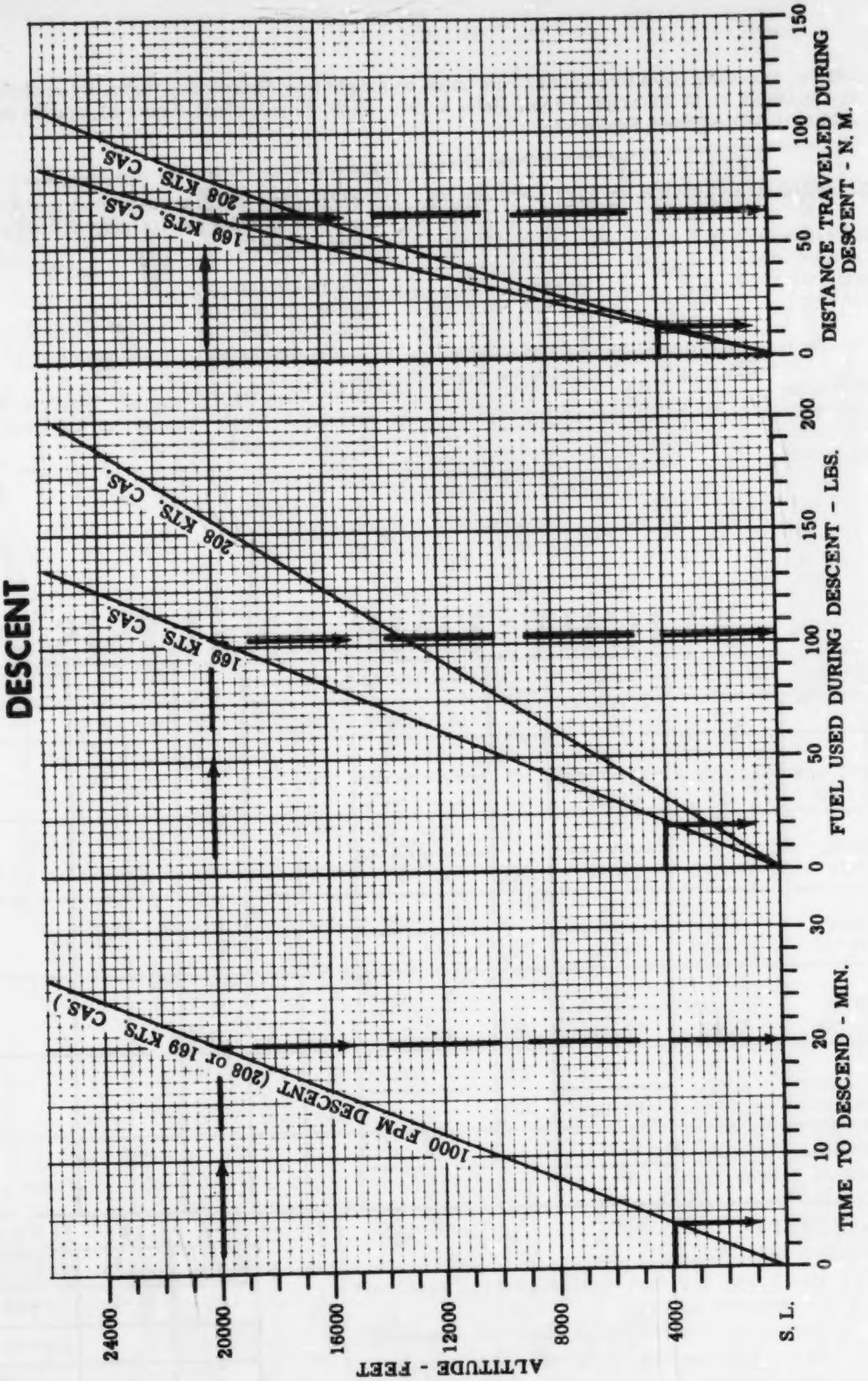

DESCENT
ALTITUDE - FEET
24000
20000
16000
12000
8000
4000
S.L.
TIME TO DESCEND - MIN.
0
10
20
30
1000 FPM DESCENT (208 or 169 KTS. CAS.)
FUEL USED DURING DESCENT - LBS.
0
50
100
150
200
169 KTS. CAS.
208 KTS. CAS.
DISTANCE TRAVELED DURING DESCENT - N. M.
0
50
100
150
169 KTS. CAS.
208 KTS. CAS.

Figure 50

NOTE: Questions 6774 through 6777 are based on a flight from Phoenix Sky Harbor International Airport to Las Vegas, N. M. Municipal Airport. Refer to the: Flight Time Analysis, Figure 51, and En Route High Altitude Chart segment, Figure 52.

6774. (See NOTE above.) What is the ETE?

1—1 hour 8 minutes.
2—1 hour 5 minutes.
3—1 hour 2 minutes.
4—59 minutes.

6775. (See NOTE above.) What is the total fuel required?

1—3,020 pounds.
2—4,015 pounds.
3—4,125 pounds.
4—4,210 pounds.

6776. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel from level-off to ABQ VORTAC?

1—19.8 NAM/100.
2—20.2 NAM/100.
3—20.6 NAM/100.
4—21.0 NAM/100.

6777. (See NOTE above.) What is the approximate indicated Mach for an arrival over SJN VORTAC 11 minutes after level-off?

1—.80 Mach.
2—.78 Mach.
3—.76 Mach.
4—.74 Mach.

FLIGHT TIME ANALYSIS

CHECK POINTS		ROUTE	MACH NO.	WIND FACTOR	SPEED-KNOTS		DIST N.M.	TIME		FUEL CONSUMPTION (POUNDS)	
FROM	TO	ALTITUDE FLT/LEVEL		TEMPERATURE	TAS	GRND SPEED		LEG	TOTAL	LEG	TOTAL
PHOENIX SKY HARBOR INTL.	LEVEL OFF	J18 CLIMB	--	--- ---	--	--	60	---	:11	---	*720
LEVEL OFF	SJN VORTAC	J18 FL280	.70	+40 knots -46° C							
SJN VORTAC	ABQ VORTAC	J18 FL280	.70	+40 knots -46° C							
ABQ VORTAC	DESCENT ENTRY	J18 FL280	.70	+35 knots -46° C			20				
DESCENT ENTRY	LVS VORTAC	J18 DESCENT	--	+25 knots ---	Av. 310						
APPROACH & LAS VEGAS	LANDING MUNI.	AT						:07		250	

OTHER DATA:
*INCLUDES TAXI FUEL.

NOTE: Use 1,950 lbs./hr. fuel flow from level-off to descent entry.
Use 1,550 lbs./hr. fuel flow for descent.
Use 1,700 lbs./hr. fuel flow for reserve requirement.
No alternate airport required.

FLIGHT SUMMARY

TIME	FUEL	▨
		ENROUTE
		RESERVE
--	450	MISSED APPROACH
		TOTAL

Figure 51

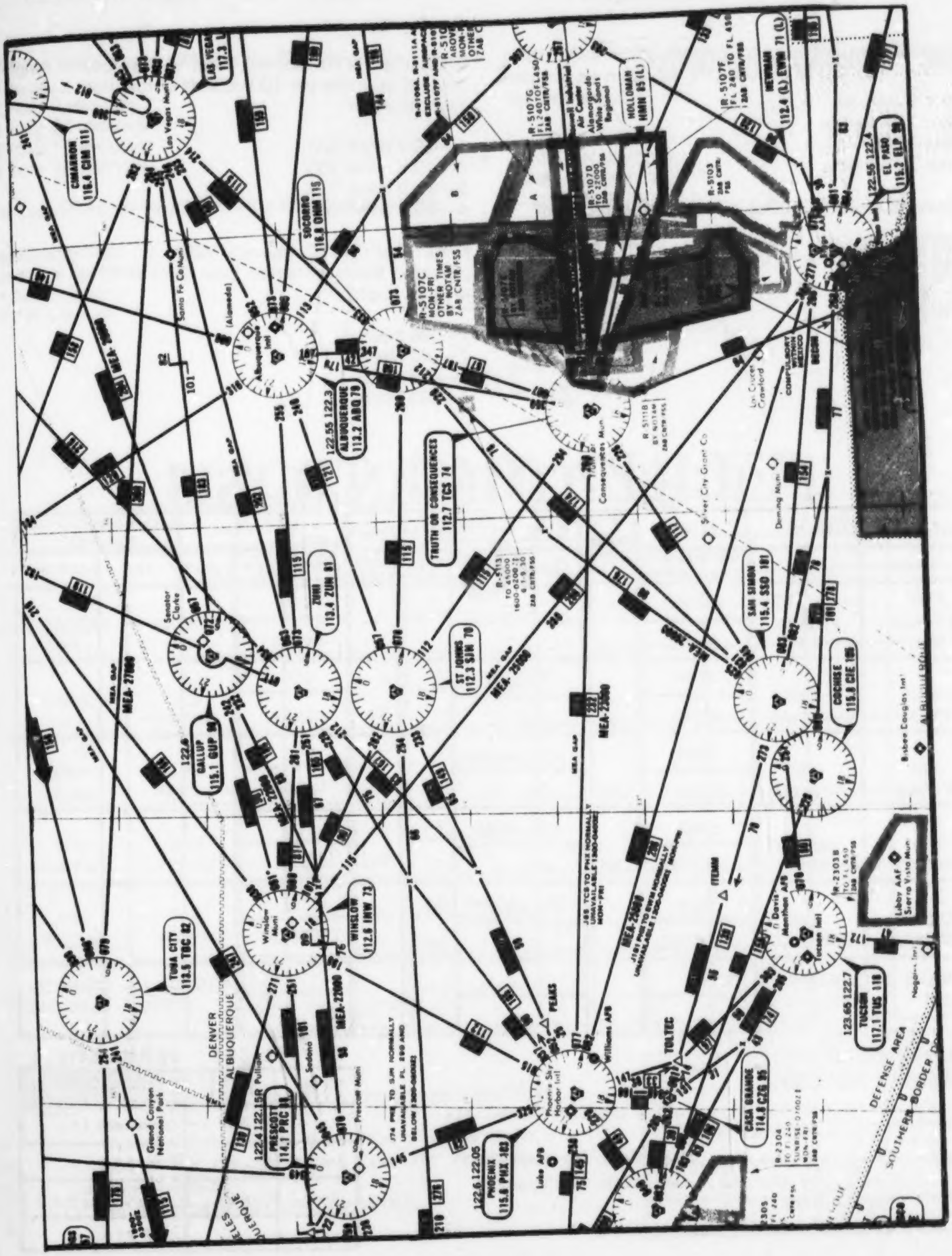

CIMARRON 116.4 CIM 111
LAS VEGAS 117.3
Las Vegas Muni
SOCORRO 116.8 ONM 115
Santa Fe Co Muni
(Alameda)
Albuquerque Intl
122.55 122.3
ALBUQUERQUE 113.2 ABQ 78
R-5107C MON-FRI OTHER TIMES BY NOTAM ZAB CNTR FSS
TRUTH OR CONSEQUENCES 112.7 TCS 74
Truth or Consequences Muni
R-5107G FL 240 TO FL 450
R-5107D
R-5103
R-5107F FL 240 TO FL 450
HOLLOMAN HMN 85 (L)
NEWMAN 112.4 (L) EWM 71 (L)
Holloman AFB
Alamogordo-White Sands Regional
122.55 122.4
EL PASO 115.2 ELP 99
R-5111B BY NOTAM
Las Cruces Crawford
Silver City Grant Co
Deming Muni
R-5113
Senator Clarke
ZUNI 113.4 ZUN 81
ST JOHNS 112.3 SJN 70
SAN SIMON 115.4 SSO 101
COCHISE 115.8 CIE 105
Bisbee Douglas Intl
GALLUP 115.1 GUP 98
122.6
MEA-27000
MEA-25000
MEA-23000
MEA GAP
WINSLOW 112.6 INW 72
Winslow Muni
TUBA CITY 113.5 TBC 82
ITEMM
R-2303B
Libby AAF Sierra Vista Muni
Davis Monthan AFB
Tucson Intl
123.65 122.7
TUCSON 117.1 TUS 116
DENVER
ALBUQUERQUE
Grand Canyon National Park
Sedona
Pulliam
Prescott Muni
122.4 122.15R
PRESCOTT 114.1 PRC 9
PEAKS
Williams AFB
Phoenix Sky Harbor Intl
TOLTEC
CASA GRANDE 114.8 CZG 95
R-2304
Luke AFB
122.6 122.05
PHOENIX 115.6 PHX 102
DEFENSE AREA
SOUTHERN BORDER

Figure 52

NOTE: Questions 6778 through 6781 are based on a flight from Las Vegas, N. M. Municipal Airport to Tuscon International Airport. Refer to the: Flight Time Analysis, Figure 53, and the En Route High Altitude Chart segment, Figure 52, page 111.

6778. (See NOTE above.) What is the ETE?

1—1 hour 9 minutes.
2—1 hour 12 minutes.
3—1 hour 15 minutes.
4—1 hour 18 minutes.

6779. (See NOTE above.) What is the total fuel required?

1—4,645 pounds.
2—4,535 pounds.
3—4,440 pounds.
4—4,345 pounds.

6780. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel from level-off to descent entry?

1—19.2 NAM/100.
2—19.5 NAM/100.
3—19.9 NAM/100.
4—20.2 NAM/100.

6781. (See NOTE above.) What is the approximate indicated Mach for arrival over ONM VORTAC 9 minutes after level-off?

1—.86 Mach.
2—.84 Mach.
3—.82 Mach.
4—.80 Mach.

FLIGHT TIME ANALYSIS

CHECK POINTS		ROUTE	MACH NO.	WIND FACTOR	SPEED-KNOTS		DIST N.M.	TIME		FUEL CONSUMPTION (POUNDS)	
FROM	TO	ALTITUDE FLT/LEVEL		TEMPERATURE	TAS	GRND SPEED		LEG	TOTAL	LEG	TOTAL
LAS VEGAS MUNI.	LEVEL OFF	J104 CLIMB	--	--- ---	--	--	45	---	:08	---	*555
LEVEL OFF	ONM VORTAC	J104 FL250	.65	-30 knots -44° C							
ONM VORTAC	SSO VORTAC	J104 FL250	.65	-25 knots -44° C							
SSO VORTAC	DESCENT ENTRY	J104 FL250	.65	-25 knots -44° C			30				
DESCENT ENTRY	TUS VORTAC	J104 DESCENT	--	-20 knots	Av. 310						
APPROACH & TUSCON	LANDING INTL.	AT						:08		270	

OTHER DATA:
*INCLUDES TAXI FUEL.

NOTE: Use 2,000 lbs./hr. fuel flow from level-off to descent entry.
Use 1,550 lbs./hr. fuel flow for descent.
Use 1,700 lbs./hr. fuel flow for reserve requirement.
No alternate airport required.

FLIGHT SUMMARY

TIME	FUEL	▨
		ENROUTE
		RESERVE
--	450	MISSED APPROACH
		TOTAL

Figure 53

NOTE: Questions 6782 through 6785 are based on a flight from Albuquerque International Airport to McCarran International Airport. Refer to the: Flight Time Analysis, Figure 54, and the En Route High Altitude Chart segment, Figure 56, page 115.

6782. (See NOTE above.) What is the ETE?

1—1 hour 9 minutes.
2—1 hour 12 minutes.
3—1 hour 15 minutes.
4—1 hour 18 minutes.

6783. (See NOTE above.) What is the total fuel required?

1—4,475 pounds.
2—4,450 pounds.
3—4,420 pounds.
4—4,395 pounds.

6784. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel from level-off to descent entry?

1—19.5 NAM/100.
2—19.8 NAM/100.
3—20.1 NAM/100.
4—20.4 NAM/100.

6785. (See NOTE above.) What is the approximate indicated Mach for arrival over PGS VORTAC 21 minutes after passing INW VORTAC?

1—.69 Mach.
2—.71 Mach.
3—.73 Mach.
4—.74 Mach.

FLIGHT TIME ANALYSIS

CHECK POINTS		ROUTE	MACH NO.	WIND FACTOR	SPEED-KNOTS		DIST N.M.	TIME		FUEL CONSUMPTION (POUNDS)	
FROM	TO	ALTITUDE FLT/LEVEL		TEMPERATURE	TAS	GRND SPEED		LEG	TOTAL	LEG	TOTAL
ALBUQUERQUE INTL.	LEVEL OFF	J72 CLIMB	--	--- ---	--	--	50	--	:09	---	*575
LEVEL OFF	ZUN VORTAC	J72 FL240	.68	-30 knots -30° C							
ZUN VORTAC	INW VORTAC	J72 FL240	.68	-35 knots -30° C							
INW VORTAC	PGS VORTAC	J72 FL240	.68	-35 knots -30° C							
PGS VORTAC	BLD VORTAC	J72 DESCENT	--	-20 knots ---	Av. 310						
APPROACH McCARRAN	& LANDING INTL. - -	AT - - - - - -	- -	- - - - - - -	- -	- -	- - -	:07		270	

OTHER DATA:
*INCLUDES TAXI FUEL.
NOTE: Use 2,050 lbs./hr. fuel flow from level-off to descent entry.
Use 1,550 lbs./hr. fuel flow for descent.
Use 1,700 lbs./hr. fuel flow for reserve requirement.
No alternate airport required.

FLIGHT SUMMARY

TIME	FUEL	▨
		ENROUTE
		RESERVE
--	450	MISSED APPROACH
		TOTAL

Figure 54

NOTE: Questions 6786 through 6789 are based on a flight from Tucson International Airport to Albuquerque International Airport. Refer to the: Flight Time Analysis, Figure 55, and the En Route High Altitude Chart segment, Figure 56.

6786. (See NOTE above.) What is the ETE?

1—45 minutes.
2—48 minutes.
3—51 minutes.
4—54 minutes.

6787. (See NOTE above.) What is the total fuel required?

1—3,705 pounds.
2—3,730 pounds.
3—3,760 pounds.
4—3,785 pounds.

6788. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel from level-off to ONM VORTAC?

1—19.9 NAM/100.
2—20.2 NAM/100.
3—20.5 NAM/100.
4—20.8 NAM/100.

6789. (See NOTE above.) What is the approximate indicated Mach for arrival over ONM VORTAC 24 minutes after passing SSO VORTAC?

1—.66 Mach.
2—.68 Mach.
3—.71 Mach.
4—.73 Mach.

FLIGHT TIME ANALYSIS

CHECK POINTS		ROUTE	MACH NO.	WIND FACTOR	SPEED-KNOTS		DIST	TIME		FUEL CONSUMPTION (POUNDS)	
FROM	TO	ALTITUDE FLT/LEVEL		TEMPERATURE	TAS	GRND SPEED	N.M.	LEG	TOTAL	LEG	TOTAL
TUSCON INTL.	LEVEL OFF	J104 CLIMB	--	--- ---	--	--	55	--	:10	---	*680
LEVEL OFF	SSO VORTAC	J104 FL290	.72	+35 knots -41° C							
SSO VORTAC	ONM VORTAC	J104 FL280	.72	+30 knots -41° C							
ONM VORTAC	ABQ VORTAC	J57 DESCENT	--	+25 knots ---	Av. 310						
APPROACH & ALBUQUERQUE	LANDING INTL. - -	AT - - - - - -	- -	- - - - - -	- -	- -	- - -	:08		270	

OTHER DATA:

*INCLUDES TAXI FUEL.

NOTE: Use 2,050 lbs./hr. fuel flow from level-off to descent entry.
Use 1,550 lbs./hr. fuel flow for descent.
Use 1,700 lbs./hr. fuel flow for reserve requirement.
No alternate airport required.

FLIGHT SUMMARY

TIME	FUEL	▨
		ENROUTE
		RESERVE
--	450	MISSED APPROACH
		TOTAL

Figure 55

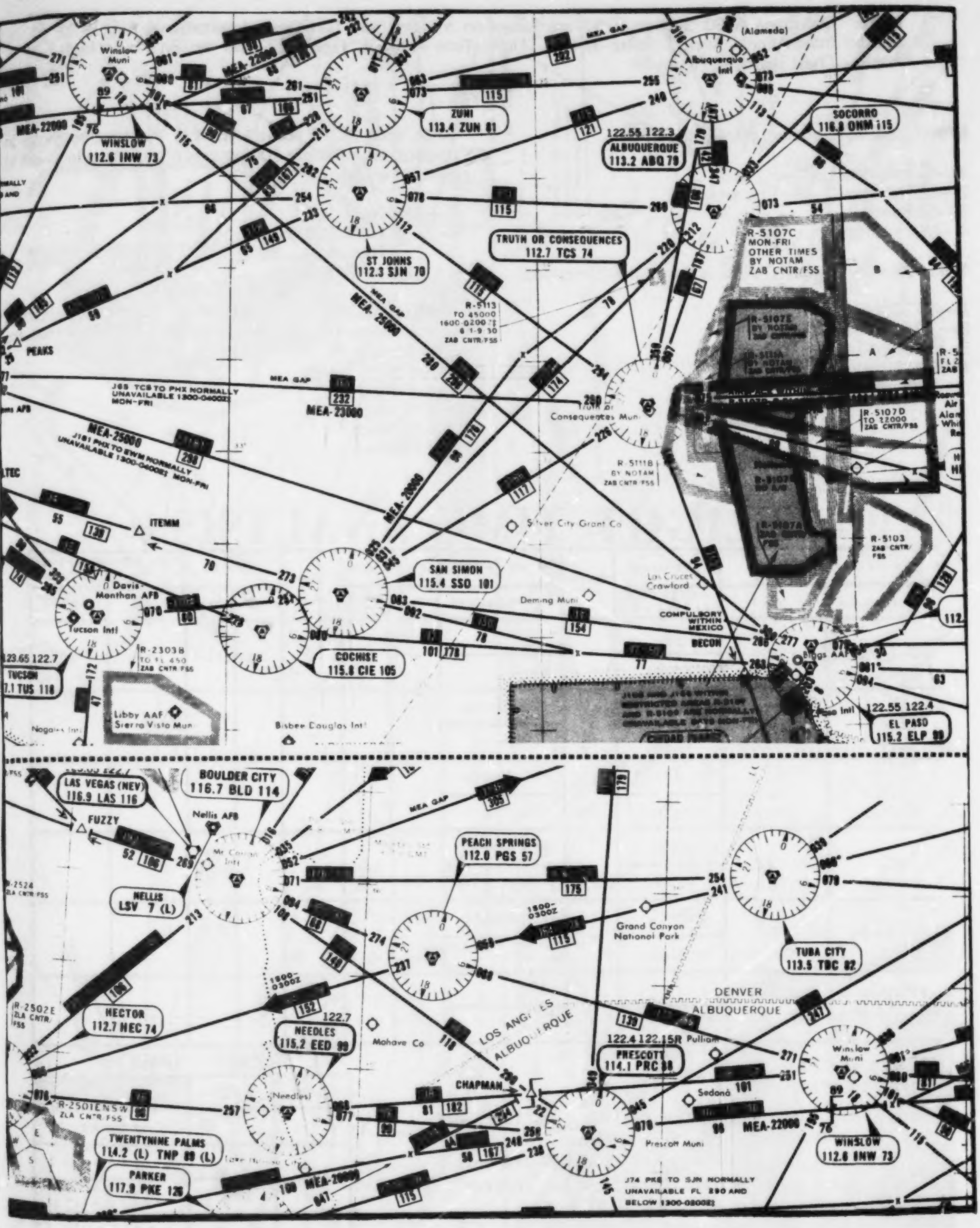

Winslow Muni
WINSLOW 112.6 INW 73
MEA-22000
ZUNI 113.4 ZUN 81
Albuquerque Intl
(Alameda)
ALBUQUERQUE 113.2 ABQ 78
122.55 122.3
SOCORRO 116.8 ONM 115
MEA GAP
ST JOHNS 112.3 SJN 78
TRUTH OR CONSEQUENCES 112.7 TCS 74
R-5107C MON-FRI OTHER TIMES BY NOTAM ZAB CNTR/FSS
R-5113 TO 45000 1600-0200Z‡ 6 1-9 30 ZAB CNTR/FSS
MEA-25000
PEAKS
J65 TCS TO PHX NORMALLY UNAVAILABLE 1300-0400Z‡ MON-FRI
MEA-23000
J181 PHX TO EWM NORMALLY UNAVAILABLE 1300-0400Z‡ MON-FRI
Truth or Consequences Muni
R-5107D TO 22000 ZAB CNTR/FSS
R-5111B BY NOTAM ZAB CNTR/FSS
ITEMM
Silver City Grant Co
R-5103 ZAB CNTR/FSS
SAN SIMON 115.4 SSO 101
Davis Monthan AFB
Tucson Intl
Las Cruces Crawford
Deming Muni
COMPULSORY WITHIN MEXICO
DECON
Biggs AAF
COCHISE 115.8 CIE 105
R-2303B TO FL 450 ZAB CNTR/FSS
122.65 122.7
TUCSON 116.1 TUS 116
Libby AAF Sierra Vista Muni
Nogales Intl
Bisbee Douglas Intl
122.55 122.4
EL PASO 115.2 ELP 99
LAS VEGAS (NEV) 116.9 LAS 116
BOULDER CITY 116.7 BLD 114
FUZZY
Nellis AFB
NELLIS LSV 7 (L)
R-2524 ZLA CNTR/FSS
PEACH SPRINGS 112.0 PGS 57
1800-0300Z
Grand Canyon National Park
TUBA CITY 113.5 TBC 82
DENVER
ALBUQUERQUE
LOS ANGELES
ALBUQUERQUE
HECTOR 112.7 NEC 74
R-2502E ZLA CNTR/FSS
122.7
NEEDLES 115.2 EED 99
Mohave Co
122.4 122.15R Pulliam
PRESCOTT 114.1 PRC 38
CHAPMAN
Sedona
Winslow Muni
WINSLOW 112.6 INW 73
R-2501E N S W ZLA CNTR/FSS
TWENTYNINE PALMS 114.2 (L) TNP 89 (L)
PARKER 117.9 PKE 126
MEA-20000
Prescott Muni
J74 PKE TO SJN NORMALLY UNAVAILABLE FL 290 AND BELOW 1300-0800Z‡

Figure 56

NOTE: Questions 6790 through 6793 are based on a flight from San Diego International Airport to Tuscon International Airport. Refer to the: Flight Time Analysis, Figure 57, and the En Route High Altitude Chart segment, Figure 58.

6790. (See NOTE above.) What is the ETE?

1—47 minutes.
2—50 minutes.
3—53 minutes.
4—56 minutes.

6791. (See NOTE above.) What is the total fuel required?

1—3,735 pounds.
2—3,760 pounds.
3—3,790 pounds.
4—3,815 pounds.

6792. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel from level-off to descent entry?

1—21.5 NAM/100.
2—21.8 NAM/100.
3—22.1 NAM/100.
4—22.4 NAM/100.

6793. (See NOTE above.) What is the approximate indicated Mach for arrival over GBN VORTAC 18 minutes after passing IPL VORTAC?

1—.70 Mach.
2—.72 Mach.
3—.74 Mach.
4—.76 Mach.

FLIGHT TIME ANALYSIS

CHECK POINTS		ROUTE	MACH NO.	WIND FACTOR	SPEED-KNOTS		DIST N.M.	TIME		FUEL CONSUMPTION (POUNDS)	
FROM	TO	ALTITUDE FLT/LEVEL		TEMPERATURE	TAS	GRND SPEED		LEG	TOTAL	LEG	TOTAL
SAN DIEGO INTL.	LEVEL OFF	J2 CLIMB	--	--- ---	--	--	55	--	:10	---	*680
LEVEL OFF	IPL VORTAC	J2 FL280	.75	+35 knots -50° C							
IPL VORTAC	GBN VORTAC	J2 FL290	.75	+40 knots -50° C							
GBN VORTAC	DESCENT ENTRY	J104 FL290	.75	+40 knots -50° C			64				
DESCENT ENTRY	TUS VORTAC	J92 DESCENT	--	+30 knots ---	Av. 310						
APPROACH & TUSCON	LANDING INTL.	AT						:05		180	

OTHER DATA:
*INCLUDES TAXI FUEL.

NOTE: Use 2,000 lbs./hr. fuel flow from level-off to descent entry.
Use 1,550 lbs./hr. fuel flow for descent.
Use 1,700 lbs./hr. fuel flow for reserve requirement.
No alternate airport required.

FLIGHT SUMMARY

TIME	FUEL	▨
		ENROUTE
		RESERVE
--	450	MISSED APPROACH
		TOTAL

Figure 57

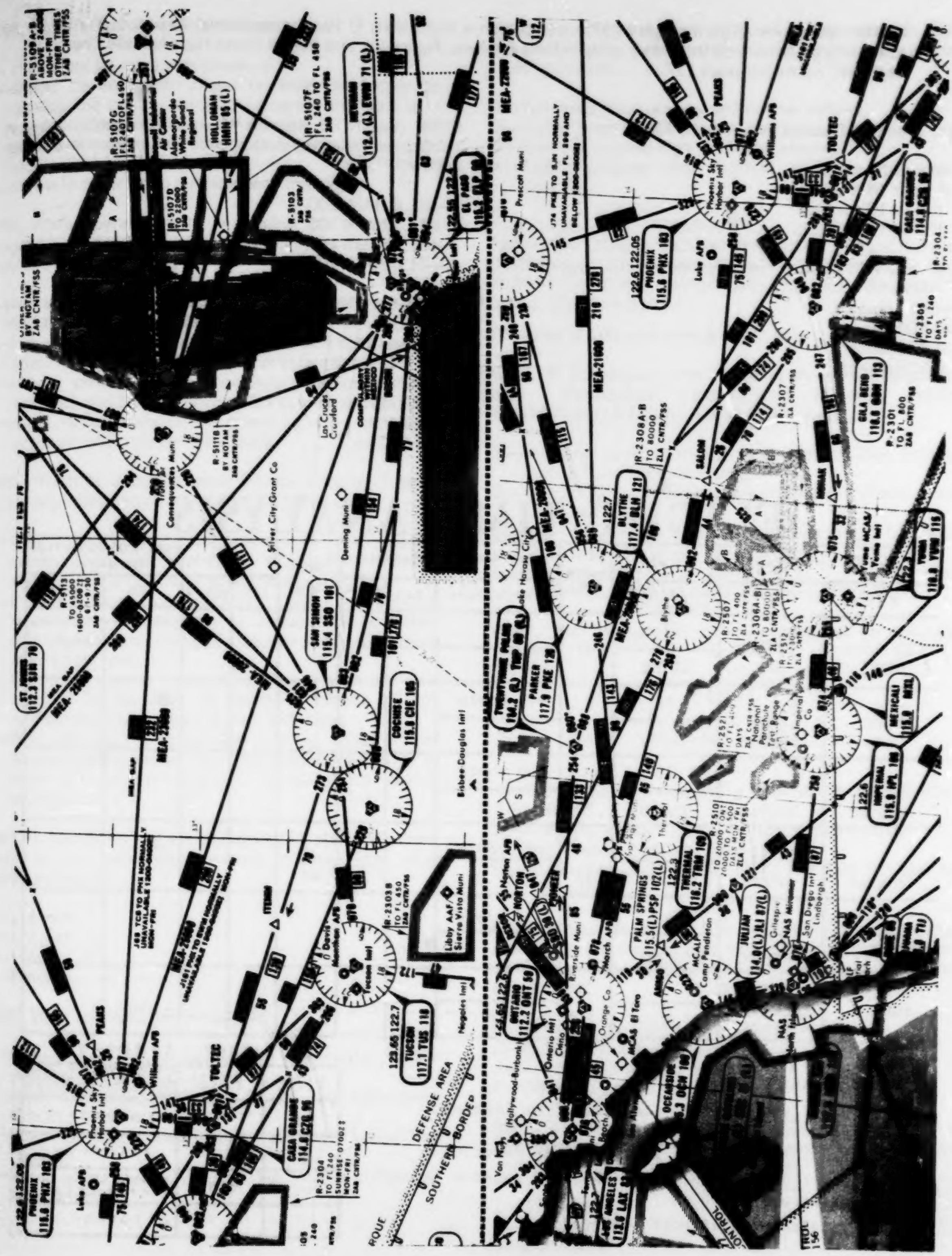

PHOENIX 115.6 PHX 103
122.6 122.05
CASA GRANDE 114.8 CZG 95
TUCSON 117.1 TUS 116
123.65 122.7
COCHISE 115.8 CIE 105
SAN SIMON 115.4 SSO 101
ST JOHNS 112.3 SJN 70
HOLLOMAN HMN 85 (L)
EL PASO
GILA BEND 116.6 GBN 113
TWENTYNINE PALMS 114.2 (L) TNP 90 (L)
PARKER 117.9 PKE 126
BLYTHE 117.4 BLH 121
PALM SPRINGS 115.5 (L) PSP 102 (L)
THERMAL 116.2 TRM 109
JULIAN 114.0 (L) JLI 87 (L)
IMPERIAL 115.9 IPL 108
MEXICALI
YUMA 116.8 YUM 115
ONTARIO 112.2 ONT 59
LOS ANGELES 113.6 LAX
OCEANSIDE
SOUTHERN BORDER DEFENSE AREA
Lake Havasu City
Prescott Muni
Williams AFB
Luke AFB
Davis Monthan AFB
Nogales Intl
Bisbee-Douglas Intl
Deming Muni
Silver City-Grant Co
Consequences Muni
Las Cruces Crawford
Libby AAF Sierra Vista Muni
Blythe
Imperial Co
San Diego Intl Lindbergh
MCAS El Toro
Camp Pendleton
Riverside Muni
March AFB
Norton AFB
Ontario Intl
Hollywood-Burbank
MEA-21000
MEA-23000

Figure 58

NOTE: Questions 6794 through 6797 are based on a flight from El Paso International Airport to Yuma International Airport. Refer to the: Flight Time Analysis, Figure 59, and the En Route High Altitude Chart segment, Figure 58, page 117.

6794. (See NOTE above.) What is the ETE?

1—1 hour 21 minutes.
2—1 hour 18 minutes.
3—1 hour 15 minutes.
4—1 hour 12 minutes.

6795. (See NOTE above.) What is the total fuel required?

1—4,430 pounds.
2—4,460 pounds.
3—4,490 pounds.
4—4,520 pounds.

6796. (See NOTE above.) What is the specific range in nautical air miles per 100 pounds of fuel from level-off to GBN VORTAC?

1—21.8 NAM/100.
2—21.5 NAM/100.
3—21.3 NAM/100.
4—21.0 NAM/100.

6797. (See NOTE above.) What is the approximate indicated Mach for arrival over CIE VORTAC 22 minutes after level-off?

1—.72 Mach.
2—.70 Mach.
3—.68 Mach.
4—.66 Mach.

FLIGHT TIME ANALYSIS

CHECK POINTS		ROUTE	MACH NO.	WIND FACTOR	SPEED-KNOTS		DIST	TIME		FUEL CONSUMPTION (POUNDS)	
FROM	TO	ALTITUDE FLT/LEVEL		TEMPERATURE	TAS	GRND SPEED	N.M.	LEG	TOTAL	LEG	TOTAL
EL PASO INTL.	LEVEL OFF	J2 CLIMB	--	--- ---	--	--	45	--	:08	---	*555
LEVEL OFF	CIE VORTAC	J2 FL250	.70	-40 knots -30° C							
CIE VORTAC	GBN VORTAC	J2 FL250	.70	-40 knots -30° C							
GBN VORTAC	DESCENT ENTRY	J2 FL250	.70	-35 knots -25° C			43				
DESCENT ENTRY	YUM VORTAC	J2 DESCENT	--	-25 knots ---	Av. 310						
APPROACH YUMA	& LANDING INTL.	AT						:07		250	

OTHER DATA:
*INCLUDES TAXI FUEL

NOTE: Use 1,950 lbs./hr. fuel flow from level-off to descent entry.
Use 1,550 lbs./hr. fuel flow for descent.
Use 1,700 lbs./hr. fuel flow for reserve requirement.
No alternate airport required.

FLIGHT SUMMARY

TIME	FUEL	▨
		ENROUTE
		RESERVE
--	450	MISSED APPROACH
		TOTAL

Figure 59

6798. Stalls in twin-engine airplanes

1—should not be done with power on.
2—should be done with power on only one engine to develop the pilot's ability to recognize the start of a rapid roll about the longitudinal axis.
3—should not be done intentionally with one engine inoperative.
4—normally occur at an airspeed less than V_{MC}.

6799. While operating with an engine out at V_{MC}, the airspeed is inadvertently allowed to fall below V_{MC}. In this situation, the pilot should

1—immediately apply full power on the operating engine and bank 5° toward that engine.
2—immediately apply full power on the operating engine, attain level flight, and maintain zero bank.
3—reduce power on the operating engine, increase airspeed, and bank 5° toward the operating engine.
4—apply partial power on the operating engine, increase airspeed, and maintain zero bank.

6800. Which is a performance standard for light twin-engine airplanes certificated under FAR Part 23?

1—With one engine inoperative, in the takeoff configuration, the airplane is required to maintain altitude, but is not required to climb.
2—In the cruise configuration, with one engine inoperative, the airplane is required to maintain altitude but climb capability may be reduced no more than 90 percent.
3—With one engine inoperative, the airplane is not required to be able to maintain altitude in any configuration regardless of pilot technique.
4—With one engine inoperative, stalling speed in the landing configuration must be greater than V_{MC} in order to assure direction controllability during landing.

6801. A takeoff is not recommended if standing water, slush, or wet snow on a runway is more than what maximum depth?

1—1/4 inch.
2—1/2 inch.
3—1 inch.
4—2 inches.

6802. What is critical Mach number?

1—Highest speed possible without supersonic airflow over any part of the wing.
2—Mach .78 through Mach .86 for all high-speed aircraft.
3—Speed at which the aircraft starts to "buffet" or "tuck."
4—Speed where the airflow over the wing is completely supersonic.

6803. Which of the following could be an indication that the starter relay (solenoid) has failed mechanically in the "ON" position?

1—Low loadmeter reading and normal voltage.
2—Lights brighter than normal and high voltage.
3—Low voltage and high loadmeter reading.
4—Lights brighter than normal and low loadmeter reading.

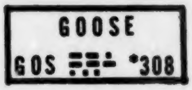
"CLEARED TO (DESTINATION) AIRPORT FILED. MAINTAIN SEVEN THOUSAND, EXPECT FLIGHT LEVEL TWO FIVE ZERO FIVE MINUTES AFTER DEPARTURE. FLY RUNWAY HEADING, DEPARTURE CONTROL FREQUENCY 124.6, SQUAWK 3174."

(Weather is 100 obscured and 1/2 mile in fog.)

6804. If you depart after receiving the above clearance and immediately experience two-way radio communications failure, ATC expects you to

1—maintain runway heading for 5 minutes, then turn to join J37 and climb to FL250.
2—turn to join J37, maintain 7,000 for 5 minutes, then climb to FL250.
3—maintain runway heading until reaching 7,000 feet MSL, then turn to join J37 and climb to FL250.
4—turn immediately to join J37. At 5 minutes after departure, climb to your flight planned altitude.

6805. What operational status is indicated for this low frequency NDB?



1—Continuous voice capability is available on a 24-hour basis.
2—The radio beacon does not operate continuously.
3—Voice capability is not available.
4—The facility is unreliable; check NOTAMS for specific information.

6806. Where should the RMI bearing pointer be located relative to the wingtip reference to maintain a constant DME distance in a left-hand arc with a right crosswind component?

1—Ahead of the right wingtip reference.
2—Behind the left wingtip reference.
3—On the right wingtip reference.
4—Ahead of the left wingtip reference.

6807. At what maximum indicated airspeed can a reciprocating engine airplane operate in the airspace underlying a terminal control area?

1—156 knots.
2—180 knots.
3—200 knots.
4—230 knots.

6808. Where should the RMI bearing pointer be located relative to the wingtip reference to maintain a constant DME distance in a right-hand arc with a left crosswind component?

1—Ahead of the right wingtip reference.
2—Behind the left wingtip reference.
3—Behind the right wingtip reference.
4—Ahead of the left wingtip reference.

6809. For a noise abatement profile, which airspeed is recommended?

1—V_Z +5 knots to 500 feet AGL.
2—V_A +10 knots to 500 feet above the airport elevation.
3—V_{YSE} +5 knots to 1,000 feet AGL.
4—V_2 +10 to 20 knots to 1,000 feet above the airport elevation.

6810. If the headwind is 10 percent of the takeoff airspeed, the takeoff distance will be reduced by approximately

1—10 percent.
2—20 percent.
3—30 percent.
4—40 percent.

6811. Which fixes on the Instrument Approach Procedure Charts are initial approach fixes?

1—Only those on the en route facilities ring and those at the start of an arc approach.
2—Any fix on the en route facilities ring, the feeder facilities ring, and those at the start of arc approaches.
3—Only the fixes at the start of arc approaches and those on either the feeder facilities ring or en route facilities ring that have a transition course shown to the approach procedure.
4—Any fix that is identified by the letters IAF.

"CLEARED TO (DESTINATION) AIRPORT AS FILED, MAINTAIN EIGHT THOUSAND, EXPECT FLIGHT LEVEL TWO FOUR ZERO FIVE MINUTES AFTER DEPARTURE. FLY RUNWAY HEADING, DEPARTURE CONTROL FREQUENCY 126.65, SQUAWK 3216."

6812. If you depart after receiving the above clearance and immediately experience two-way radio communications failure, ATC expects you to

1—turn immediately to join J26. Climb to your flight planned altitude 5 minutes after departure.
2—maintain runway heading for 5 minutes, then turn to join J26, and climb to FL240.
3—Turn to join J26, maintain 8,000 for 5 minutes, then climb to FL240 5 minutes after departure.
4—maintain runway heading until reaching 8,000, then turn to join J26, and climb to FL240.

6813. Which information is necessary to determine the category of an airplane for instrument approaches?

1—The stall speed in landing configuration at maximum takeoff weight.
2—The stall speed in landing configuration at maximum gross landing weight.
3—The minimum steady flight speed at which the airplane is controllable and the actual landing weight.
4—The minimum steady flight speed at which the airplane is controllable and the actual takeoff weight.

6814. At what point should the timing begin for the second leg outbound in the holding pattern at LOGEN Intersection? (See Figure 60.)

1—Crossing the 041 radial of OCR VORTAC.
2—After completion of turn to the appropriate outbound heading.
3—Abeam the holding fix, or wings level, whichever occurs last.
4—Abeam the holding fix, or wings level, whichever occurs first.

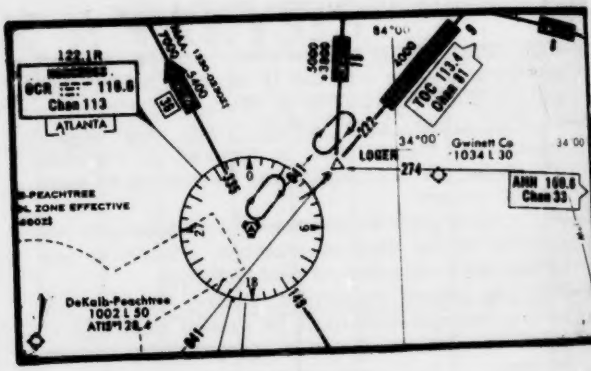


Figure 60

6815. If you enter severe turbulence, you should make the necessary power adjustments and attempt to maintain

1—a level flight attitude.
2—a constant altitude.
3—a constant airspeed.
4—a constant airspeed and altitude.

6816. At approximately what speed should you expec dynamic hydroplaning to occur if a tire has an a pressure of 135 PSI?

1—96 knots.
2—100 knots.
3—104 knots.
4—108 knots.

6817. What frequency should be used to contact the Los Angeles En Route Flight Advisory Service for operations below FL180? (See Figure 61.)

1—122.7.
2—122.2.
3—121.1R.
4—122.0.

6818. What VHF frequencies are normally available for the Los Angeles FSS? (See Figure 61.)

1—122.2 and 121.5 only.
2—122.0, 122.2, 121.5, 122.7, and 122.1R.
3—122.0, 122.2, 121.5, and 122.1R.
4—122.0, 122.7, 121.5, and 122.1R.

6819. At what minimum altitude should you cross the POM VORTAC when flying northeast on V8N? (See Figure 61, Arrow A.)

1—10,800 feet MSL.
2—10,300 feet MSL.
3—10,700 feet MSL.
4—11,500 feet MSL.

6820. At what minimum altitude should you cross the POM VORTAC when flying northwest on V197? (See Figure 61, Arrow A.)

1—10,300 feet MSL.
2—10,000 feet MSL.
3—8,300 feet MSL.
4—4,500 feet MSL.

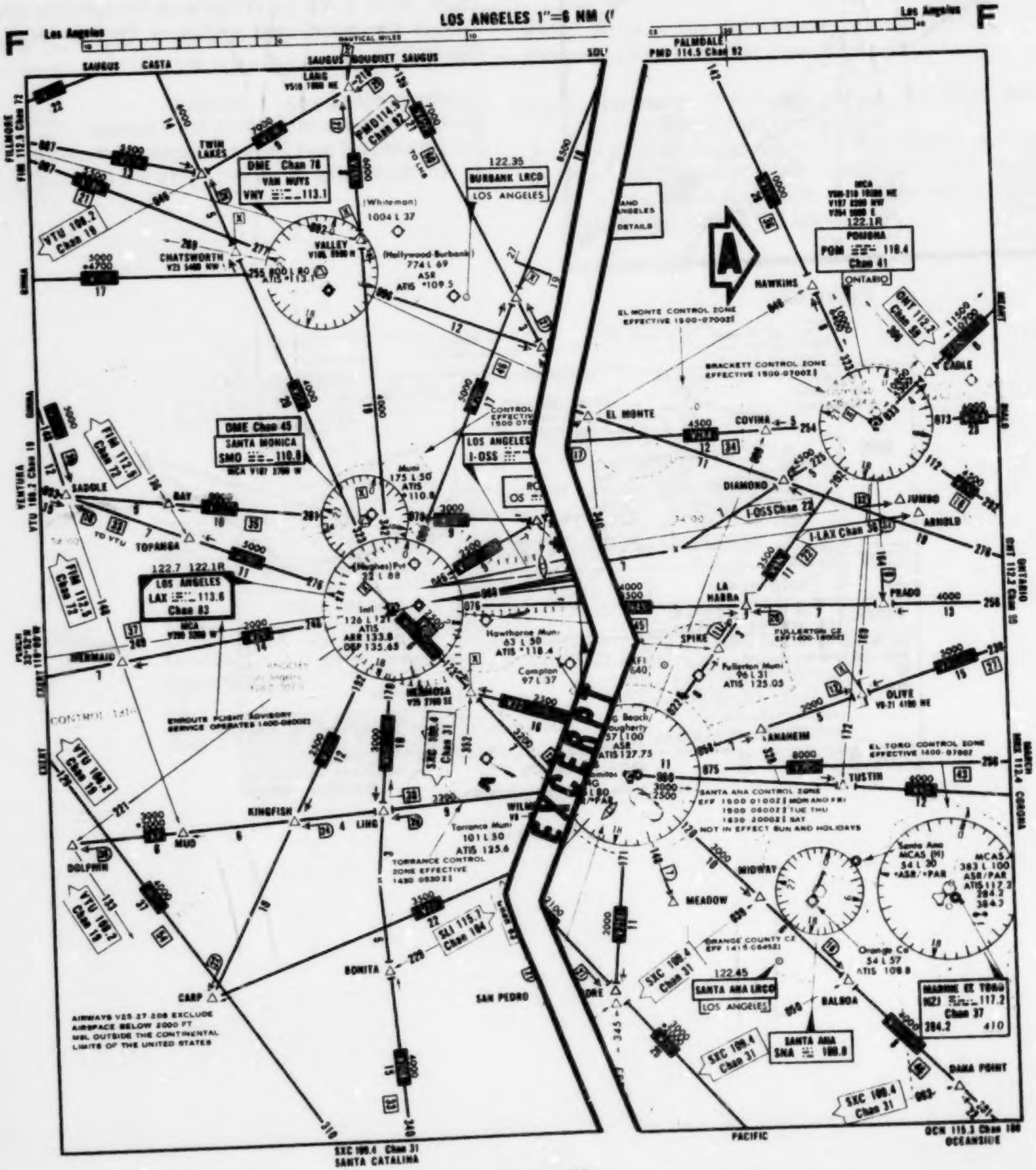

LOS ANGELES 1"=6 NM
F
F
Los Angeles
SAUGUS
CASTA
BOUQUET
LANG
TWIN LAKES
DME Chan 78
VAN NUYS
VNY 113.1
PMD 114.5 Chan 92
PALMDALE
122.35
BURBANK LRCO
LOS ANGELES
VTU 108.2 Chan 19
CHATSWORTH
VALLEY
(Whiteman)
(Hollywood Burbank)
EL MONTE CONTROL ZONE
BRACKETT CONTROL ZONE
A
HAWKINS
POMONA
POM 110.4 Chan 41
122.1R
ONTARIO
ONT 112.2 Chan 59
EAGLE
EL MONTE
COVINA
DIAMOND
JUMBO
ARNOLD
DME Chan 45
SANTA MONICA
SMO 110.8
FIM 112.5 Chan 72
SADDLE
BAY
TOPANGA
122.7
122.1R
LOS ANGELES
LAX 113.6
Chan 83
I-OSS
I-LAX
LA HABRA
PRADO
SPIKE
OLIVE
ANAHEIM
EL TORO CONTROL ZONE
TUSTIN
HERMOSA
ENROUTE FLIGHT ADVISORY SERVICE OPERATES 1400-0400Z
KINGFISH
LIMO
MUD
DOLPHIN
EXCERPT
TORRANCE CONTROL ZONE
SANTA ANA CONTROL ZONE
MIDWAY
MEADOW
SLI 115.7 Chan 104
BONITA
SAN PEDRO
CARP
SXC 108.4 Chan 31
122.45
SANTA ANA LRCO
LOS ANGELES
SANTA ANA
SNA 108.0
BALBOA
MARINE EL TORO
DANA POINT
PACIFIC
OCN 115.3 Chan 100
OCEANSIDE
SXC 108.4 Chan 31
SANTA CATALINA
AIRWAYS V25 27 458 EXCLUDE AIRSPACE BELOW 2000 FT MSL OUTSIDE THE CONTINENTAL LIMITS OF THE UNITED STATES

Figure 61

6821. When should timing begin for the second leg outbound in the holding pattern over CANNON FALLS Intersection shown in Figure 62? (DME NOTAMed out of service.)

1—Abeam the holding fix, or wings level, whichever occurs first.
2—Abeam the holding fix, or wings level, whichever occurs last.
3—Crossing the 238 radial of EAU VORTAC.
4—After completing turn to the appropriate outbound heading.

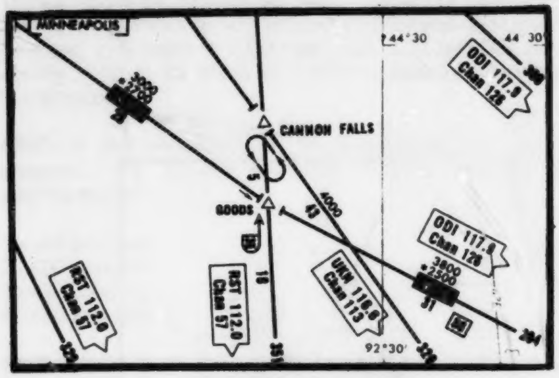

MINNEAPOLIS
44°30
44 30
ODI 117.8 Chan 125
CANNON FALLS
GOODS
4000
43
ODI 117.8 Chan 125
3800
*2500
31
UKN 116.6 Chan 113
RST 112.0 Chan 57
RST 112.0 Chan 57
16
92°30'

Figure 62

6822. What is the touchdown zone elevation on a straight-in approach to Rwy 8 at Pearson Airpark? (See Figure 63.)

1—540 feet.
2—516 feet.
3—30 feet.
4—24 feet.

6823. How should a pilot determine the MAP when on final approach of the LDA BC RWY 8 at Pearson Airpark? (See Figure 63.)

1—When 540 feet is reached on the LOC.
2—At 6 DME miles from the final approach fix.
3—After crossing Beach Intersection.
4—When time has expired inbound from the FAF.

6824. What is the significance of the symbols indicated at "A" in the aerodrome sketch of Pearson Airpark? (See Figure 63.)

1—An arresting gear is installed.
2—Overruns are other than hard surface.
3—Runways 8 and 26 have displaced thresholds.
4—Bi-directional threshold lights are installed.

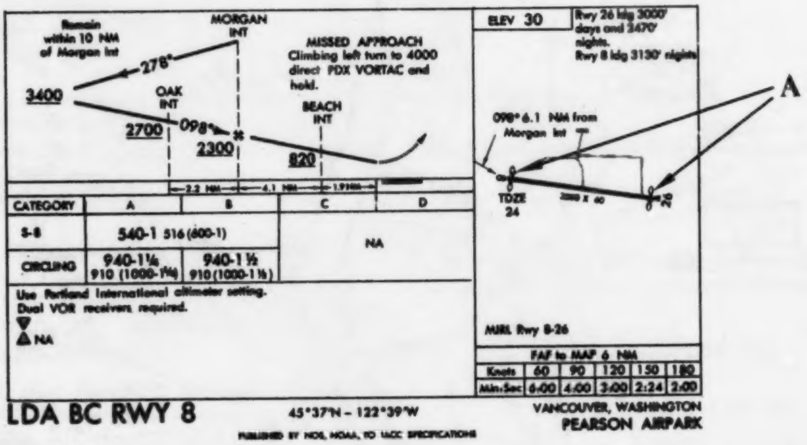

Remain within 10 NM of Morgan Int
MORGAN INT
278°
3400
OAK INT
2700
098°
2300
MISSED APPROACH Climbing left turn to 4000 direct PDX VORTAC and hold.
BEACH INT
820
2.2 NM
4.1 NM
1.9 NM
CATEGORY
A
B
C
D
S-8
540-1 516 (600-1)
NA
CIRCLING
940-1¼ 910 (1000-1¼)
940-1½ 910 (1000-1½)
Use Portland International altimeter setting.
Dual VOR receivers required.
NA
ELEV 30
Rwy 26 ldg 3000' days and 2470' nights.
Rwy 8 ldg 3130' nights
A
098° 6.1 NM from Morgan Int
TDZE 24
MIRL Rwy 8-26
FAF to MAP 6 NM
Knots 60 90 120 150 180
Min:Sec 6:00 4:00 3:00 2:24 2:00
LDA BC RWY 8
45°37'N - 122°39'W
PUBLISHED BY NOS, NOAA, TO IACC SPECIFICATIONS
VANCOUVER, WASHINGTON
PEARSON AIRPARK

Figure 63

6825. What are the landing minimums for a side-step maneuver for an approach category C airplane using DME? (See Figure 64.)

1—720/1-3/4.
2—620/24.
3—460/24.
4—300/24.

6826. What are the landing minimums for a side-step maneuver in an approach category D airplane using DME? (See Figure 64.)

1—720/2-1/4.
2—620/60.
3—460/40.
4—300/24.

6827. What is the height of the electronic glide slope above the displaced threshold of Rwy 25L? (See Figure 64.)

1—102 feet AGL.
2—100 feet AGL.
3—83 feet AGL.
4—71 feet AGL.

6828. What are the landing minimums for a side-step maneuver in an approach category D airplane if the glide slope and DME are inoperative? (See Figure 64.)

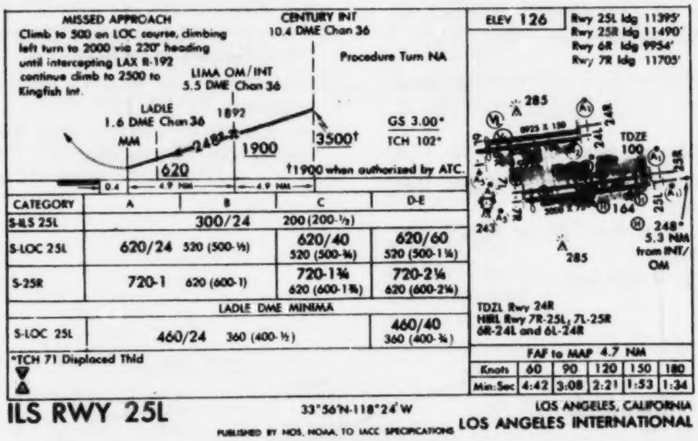
1—300/24.
2—460/40.
3—620/50.
4—720/2-1/4.

6829. What are the landing minimums for a side-step maneuver for an approach category C airplane if the DME is inoperative? (See Figure 64.)

1—300/24.
2—460/24.
3—620/24.
4—720/1-3/4.

6830. What is the significance of this symbol shown at LIMA OM/INT? (See Figure 64.)

1—It represents the beginning of the final approach angle for vertical path computers.
2—It is the final approach fix for a localizer approach.
3—It is final approach fix for the ILS RWY 25L approach.
4—It is the point at which the glide slope should be intercepted for the ILS approach.


MISSED APPROACH
Climb to 500 on LOC course, climbing left turn to 2000 via 220° heading until intercepting LAX R-192 continue climb to 2500 to Kingfish Int.
CENTURY INT
10.4 DME Chan 36
Procedure Turn NA
LIMA OM/INT
5.5 DME Chan 36
LADLE
1.6 DME Chan 36
1892
MM
248°
1900
3500†
620
GS 3.00°
TCH 102*
†1900 when authorized by ATC.
0.4
4.9 NM
4.9 NM
ELEV 126
Rwy 25L ldg 11395'
Rwy 25R ldg 11490'
Rwy 6R ldg 9954'
Rwy 7R ldg 11705'
285
24R
24L
TDZE
100
25R
25L
164
243
248°
5.3 NM from INT/OM
285
TDZL Rwy 24R
HIRL Rwy 7R-25L, 7L-25R
6R-24L and 6L-24R
*TCH 71 Displaced Thld
ILS RWY 25L
33°56'N-118°24'W
PUBLISHED BY NOS, NOAA, TO IACC SPECIFICATIONS
LOS ANGELES, CALIFORNIA
LOS ANGELES INTERNATIONAL

CATEGORY	A	B	C	D-E
S-ILS 25L	300/24 200 (200-½)			
S-LOC 25L	620/24 520 (500-½)		620/40 520 (500-¾)	620/60 520 (500-1¼)
S-25R	720-1 620 (600-1)		720-1¾ 620 (600-1¾)	720-2¼ 620 (600-2¼)
LADLE DME MINIMA				
S-LOC 25L	460/24 360 (400-½)			460/40 360 (400-¾)

FAF to MAP 4.7 NM					
Knots	60	90	120	150	180
Min:Sec	4:42	3:08	2:21	1:53	1:34

Figure 64

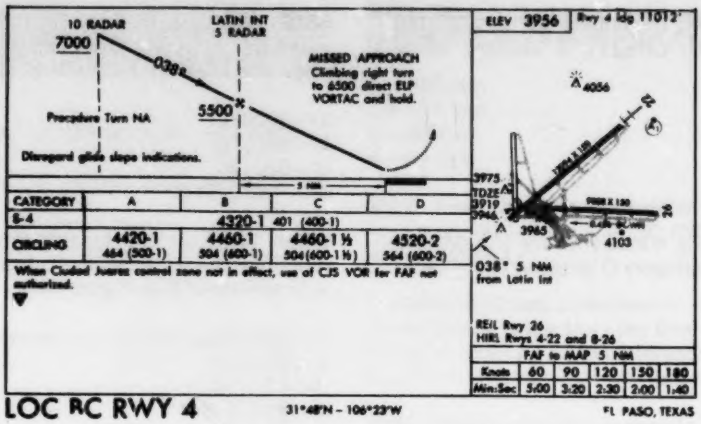

10 RADAR
7000
LATIN INT
5 RADAR
038°
5500
MISSED APPROACH
Climbing right turn to 6500 direct ELP VORTAC and hold.
Procedure Turn NA
Disregard glide slope indications.
5 NM
CATEGORY
A
B
C
D
S-4
4320-1 401 (400-1)
CIRCLING
4420-1 464 (500-1)
4460-1 504 (600-1)
4460-1½ 504 (600-1½)
4520-2 564 (600-2)
When Ciudad Juarez control zone not in effect, use of CJS VOR for FAF not authorized.
ELEV 3956
Rwy 4 ldg 11012'
4056
22
3975
TDZE 3919
3946
3965
4103
26
038° 5 NM from Latin Int
REIL Rwy 26
HIRL Rwys 4-22 and 8-26
FAF to MAP 5 NM
Knots 60 90 120 150 180
Min:Sec 5:00 3:20 2:30 2:00 1:40
LOC BC RWY 4
31°48'N - 106°23'W
EL PASO, TEXAS

Figure 65

6831. What is the highest elevation in the first 500 feet of the usable runway for landing on Rwy 4? (See Figure 65.)

1—3,965 feet MSL.
2—3,956 feet MSL.
3—3,946 feet MSL.
4—3,919 feet MSL.

6832. Which condition meets the criteria for executing a missed approach procedure for a straight–in approach to Rwy 4 at El Paso International Airport? (See Figure 65.)

Groundspeed .... 135 knots
Airplane approach category C

1—2 minutes 13 seconds after the FAF.
2—2 minutes 13 seconds after the FAF or 4,320 feet MSL, whichever occurs first.
3—2 minutes 13 seconds after the FAF or 4,320 feet MSL, whichever occurs last.
4—2 minutes after the FAF at 4,460 feet.

6833. Which condition meets the criteria for executing a missed approach procedure for a straight–in NDB approach to Rwy 22 at El Paso International Airport? (See Figure 66.)

Groundspeed .... 140 knots
Airplane approach category ....D

1—1 minute 35 seconds after the FAF at an altitude of 4,360 feet MSL.
2—1 minute 35 seconds after the FAF or 4,360 feet MSL, whichever occurs first.
3—1 minute 20 seconds after the FAF regardless of altitude.
4—1 minute 40 seconds after the FAF or 4,360 feet MSL, whichever occurs last.

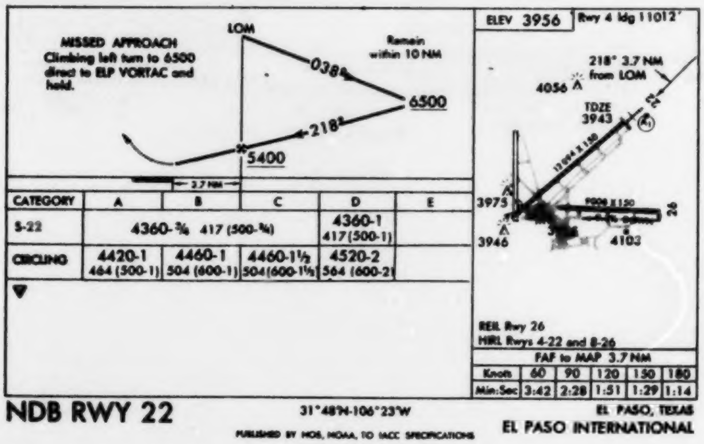

MISSED APPROACH
Climbing left turn to 6500 direct to ELP VORTAC and hold.
LOM
038°
Remain within 10 NM
6500
218°
5400
3.7 NM
CATEGORY
A
B
C
D
E
S-22
4360-¾ 417 (500-¾)
4360-1 417 (500-1)
CIRCLING
4420-1 464 (500-1)
4460-1 504 (600-1)
4460-1½ 504 (600-1½)
4520-2 564 (600-2)
ELEV 3956
Rwy 4 ldg 11012'
218° 3.7 NM from LOM
4056
TDZE 3943
22
3975
3946
4103
26
REIL Rwy 26
HIRL Rwys 4-22 and 8-26
FAF to MAP 3.7 NM
Knots 60 90 120 150 180
Min:Sec 3:42 2:28 1:51 1:29 1:14
NDB RWY 22
31°48'N-106°23'W
PUBLISHED BY NOS, NOAA, TO IACC SPECIFICATIONS
EL PASO, TEXAS
EL PASO INTERNATIONAL

Figure 66

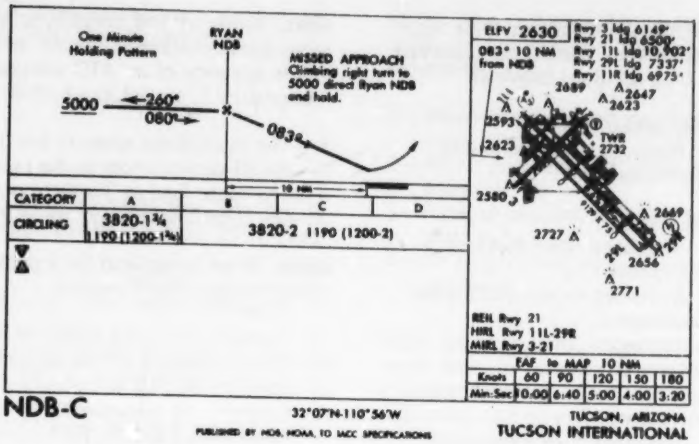

One Minute Holding Pattern
RYAN NDB
MISSED APPROACH Climbing right turn to 5000 direct Ryan NDB and hold.
5000
260°
080°
083°
10 NM
CATEGORY A B C D
CIRCLING 3820-1¾ 1190 (1200-1¾) 3820-2 1190 (1200-2)
ELEV 2630
083° 10 NM from NDB
Rwy 3 ldg 6149'
Rwy 21 ldg 6500'
Rwy 11L ldg 10,902'
Rwy 29L ldg 7337'
Rwy 11R ldg 6975'
2689
2647
2623
2593
2623
TWR 2732
2580
2669
2727
2656
2771
REIL Rwy 21
HIRL Rwy 11L-29R
MIRL Rwy 3-21
FAF to MAP 10 NM
Knots 60 90 120 150 180
Min:Sec 10:00 6:40 5:00 4:00 3:20
NDB-C
32°07'N-110°56'W
PUBLISHED BY NOS, NOAA, TO IACC SPECIFICATIONS
TUCSON, ARIZONA
TUCSON INTERNATIONAL

Figure 67

834. Which condition meets the criteria for executing a nissed approach procedure for the NDB–C approach to Tucson International? (See Figure 67.)

roundspeed .... 135 knots
irplane approach category C

—3,820 feet MSL or 4 minutes after the FAF, or whichever occurs first.
—3,920 feet MSL and 4 minutes 27 seconds after the FAF.
—3,820 feet MSL or 4 minutes 27 seconds after the FAF, whichever occurs last.
—3,920 feet MSL and 4 minutes after the FAF.

835. What is the highest elevation in the touchdown one when landing on Rwy 11L? (See Figure 68.)

—2,623 feet MSL.
—2,630 feet MSL.
—2,581 feet MSL.
—2,593 feet MSL.

6836. Which condition indicates that you are at the MAP for the localizer–only approach to Rwy 11L in an approach category C airplane? (See Figure 68.)

Groundspeed .... 135 knots

1—3,300 feet MSL and 2 minutes 3 seconds after the FAF.
2—3,180 feet MSL or 2 minutes 3 seconds after the FAF, whichever occurs first.
3—2 minutes 32 seconds after the FAF, regardless of altitude.
4—3,180 feet MSL or 2 minutes 3 seconds after the FAF, whichever occurs last.

6837. By what distance from the beginning of the runway surface is the threshold displaced on Rwy 11L? (See Figure 68.)

1—800 feet.
2—900 feet.
3—1,000 feet.
4—1,100 feet.

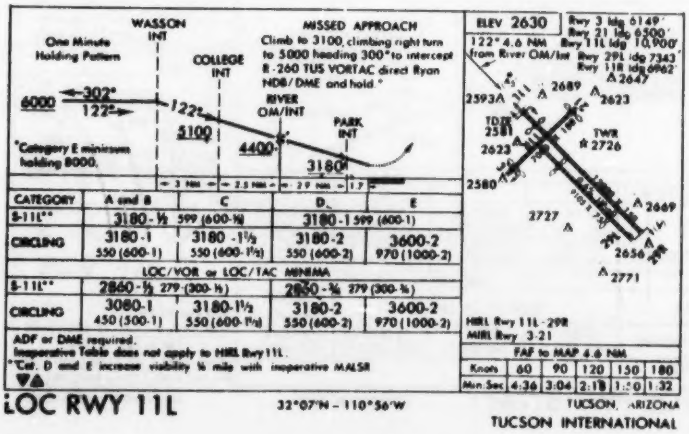

WASSON INT
One Minute Holding Pattern
COLLEGE INT
MISSED APPROACH Climb to 3100, climbing right turn to 5000 heading 300° to intercept R-260 TUS VORTAC direct Ryan NDB/DME and hold.*
6000
302°
122°
122°
RIVER OM/INT
PARK INT
5100
4400
3180
*Category E minimum holding 8000.
3 NM 2.5 NM 2.9 NM 1.7
CATEGORY A and B C D E
S-11L** 3180-½ 599 (600-½) 3180-1 599 (600-1)
CIRCLING 3180-1 550 (600-1) 3180-1½ 550 (600-1½) 3180-2 550 (600-2) 3600-2 970 (1000-2)
LOC/VOR or LOC/TAC MINIMA
S-11L** 2860-½ 279 (300-½) 2860-¾ 279 (300-¾)
CIRCLING 3080-1 450 (500-1) 3180-1½ 550 (600-1½) 3180-2 550 (600-2) 3600-2 970 (1000-2)
ADF or DME required.
Inoperative Table does not apply to HIRL Rwy 11L.
**Cat. D and E increase visibility ¼ mile with inoperative MALSR
ELEV 2630
122° 4.6 NM from River OM/Int
Rwy 3 ldg 6149'
Rwy 21 ldg 6500'
Rwy 11L ldg 10,900'
Rwy 29L ldg 7343'
Rwy 11R ldg 6962'
2689
2647
2593A
2623
TDZE 2581
2623
TWR 2726
2580
2669
2727
2656
2771
HIRL Rwy 11L-29R
MIRL Rwy 3-21
FAF to MAP 4.6 NM
Knots 60 90 120 150 180
Min:Sec 4:36 3:04 2:18 1:50 1:32
LOC RWY 11L
32°07'N - 110°56'W
TUCSON, ARIZONA
TUCSON INTERNATIONAL

Figure 68

6838. Thrust is managed to maintain IAS, and glide slope is being flown. What characteristics should be observed when a headwind shears to be a constant tailwind?

1—PITCH ATTITUDE: Decreases;
  REQUIRED THRUST: Reduced, then increased;
  VERTICAL SPEED: Increases;
  IAS: Decreases.
2—PITCH ATTITUDE: Increases;
  REQUIRED THRUST: Increased, then reduced;
  VERTICAL SPEED: Increases;
  IAS: Increases, then decreases to approach speed.
3—PITCH ATTITUDE: Decreases;
  REQUIRED THRUST: Increased, then reduced;
  VERTICAL SPEED: Increases;
  IAS: Decreases, then increases to approach speed.
4—PITCH ATTITUDE: Increases;
  REQUIRED THRUST: Reduced, then Increased;
  VERTICAL SPEED: Decreases;
  IAS: Decreases, then increases to approach speed.

6839. Which indications would require you to initiate a missed approach procedure while on the VOR RWY 8 (TAC) approach to Albuquerque International Airport? (See Figure 69.)

Groundspeed	135 knots
Airplane approach category	C
Airplane equipment suffix	/U

1—4 minutes after the FAF or 5,660 feet MSL is reached, whichever occurs first.
2—4 minutes after the FAF or 5,600 feet MSL is reached, whichever occurs last.
3—4 minutes after the FAF at or above 6,180 feet MSL.
4—4 minutes after the FAF at or above 5,660 feet MSL.

6840. What is the lowest defined Category II DH in terms of HAT?

1—200 feet.
2—150 feet.
3—100 feet.
4—50 feet.

6841. While in IFR conditions you experience two-way radio communications failure, which route should you fly in the absence of an ATC assigned route or a route ATC has advised to expect in a further clearance?

1—The most direct route to the filed alternate airport.
2—An off-airway route to the point of departure.
3—The route filed in the flight plan.
4—An "alternate airway" route to the destination.

6842. What is required for a pilot to file an ATC clearance using random RNAV routes?

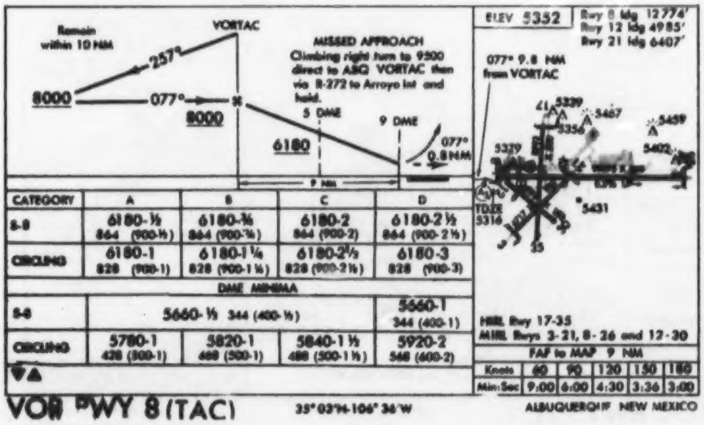
1—Special permission (letter of agreement) from ATC.
2—File a minimum of one waypoint for each ARTCC.
3—Have an aircraft equipped with a Mode C transponder.
4—Convert all waypoints to latitude and longitude coordinates for the flight plan.

6843. In determining the aircraft approach category for an instrument approach procedure, airplane speeds are based upon 1.3 times the stalling speed of the airplane in the

1—landing configuration at the estimated gross landing weight.
2—approach configuration at the estimated landing weight.
3—landing configuration at the maximum gross landing weight.
4—approach configuration at V_{REF} at the certificated landing weight.

6844. If a tire has an air pressure of 145 PSI, at approximately what speed should you expect dynamic hydroplaning to occur?

1—99 knots.
2—103 knots.
3—108 knots.
4—112 knots.


Remain within 10 NM
VORTAC
257°
8000
077°
8000
MISSED APPROACH
Climbing right turn to 9500 direct to ABQ VORTAC then via R-272 to Arroyo Int and hold.
5 DME
9 DME
6180
077°
0.8 NM
9 NM
ELEV 5352
Rwy 8 ldg 12774'
Rwy 12 ldg 4985'
Rwy 21 ldg 6407'
077° 9.8 NM from VORTAC
5339
5467
5459
5356
5329
5402
TDZE 5316
5431
35
HIRL Rwy 17-35
MIRL Rwys 3-21, 8-26 and 12-30
VOR RWY 8 (TAC)
35°03'N-106°36'W
ALBUQUERQUE NEW MEXICO

CATEGORY	A	B	C	D
S-8	6180-½ 864 (900-½)	6180-¾ 864 (900-¾)	6180-2 864 (900-2)	6180-2½ 864 (900-2½)
CIRCLING	6180-1 828 (900-1)	6180-1¼ 828 (900-1¼)	6180-2½ 828 (900-2½)	6180-3 828 (900-3)
DME MINIMA				
S-8	5660-½ 344 (400-½)			5660-1 344 (400-1)
CIRCLING	5780-1 428 (500-1)	5820-1 468 (500-1)	5840-1½ 488 (500-1½)	5920-2 568 (600-2)

FAF to MAP 9 NM

Knots	60	90	120	150	180
Min:Sec	9:00	6:00	4:30	3:36	3:00

Figure 69

6845. At what altitude AGL does the electronic glide slope cross the threshold of Rwy 24R? (See Figure 70.)

1—150 feet.
2—126 feet.
3—120 feet.
4—55 feet.

6846. When are you required to utilize the Category II holding lines on a taxiway leading to Rwy 24R? (See Figure 70.)

1—When weather conditions are below Category I instrument approach minima.
2—Any time Category II operations are in progress.
3—At all times, since Rwy 24R is approved for Category II operations.
4—Any time you are operating an airplane equipped for Category II operations.

6847. With an operative radio altimeter, to what DH are you authorized to descend for a Category II ILS to Rwy 24R if the inner marker is NOTAMed out of service? (See Figure 70.)

1—270 feet MSL.
2—220 feet MSL.
3—150 feet MSL.
4—120 feet MSL.

6848. What can a pilot expect if an airspeed indicator ram air input and drain hole are blocked?

1—The airspeed indicator will react as an altimeter.
2—The airspeed indicator will show a decrease with an increase in altitude.
3—No airspeed indicator change will occur during climbs or descents.
4—As speed increases in level flight, the airspeed indicator will show a decrease.

6849. What effect will a change in wind direction have upon maintaining a 3° glide slope at a constant true airspeed?

1—When groundspeed decreases, rate of descent must increase.
2—When groundspeed increases, rate of descent must increase.
3—Rate of descent must be constant to remain on the glide slope.
4—When groundspeed increases, rate of descent must decrease.

6850. During an en route descent in a fixed thrust-and-pitch attitude condition, both the ram air input and drain hole become completely blocked by ice. What airspeed indication can be expected?

1—Increase in indicated airspeed.
2—Indicated airspeed decreases to zero and remains at that value until the blockage is removed.
3—Decrease in indicated airspeed.
4—Indicated airspeed remains the same as it was prior to blockage.

6851. While flying a 3° glide slope, a headwind shears to a tailwind. Which conditions should the pilot expect?

1—Airspeed and pitch attitude decrease and there is a tendency to go below glide slope.
2—Airspeed and pitch attitude increase and there is a tendency to go below glide slope.
3—Airspeed and pitch attitude increase and there is a tendency to go above glide slope.
4—Airspeed and pitch attitude decrease and there is a tendency to go above glide slope.

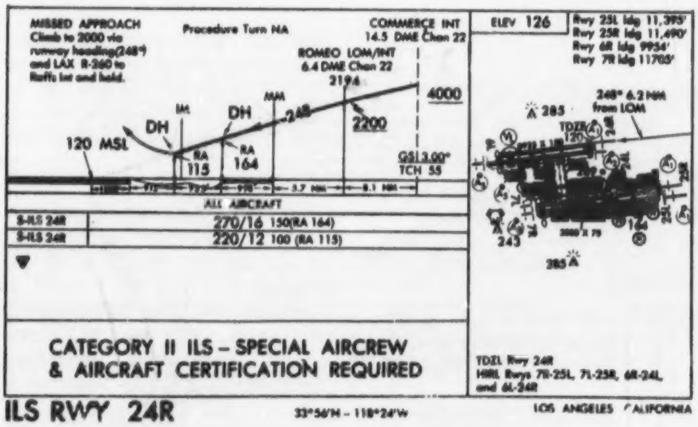

MISSED APPROACH
Climb to 2000 via runway heading(248°) and LAX R-260 to Raffs Int and hold.
Procedure Turn NA
COMMERCE INT
14.5 DME Chan 22
ROMEO LOM/INT
6.4 DME Chan 22
2194
4000
MM
IM
DH
DH
248°
2200
120 MSL
RA 115
RA 164
GS 3.00°
TCH 55
3.7 NM
8.1 NM
ALL AIRCRAFT
S-ILS 24R
270/16 150(RA 164)
S-ILS 24R
220/12 100 (RA 115)
CATEGORY II ILS – SPECIAL AIRCREW & AIRCRAFT CERTIFICATION REQUIRED
ELEV 126
Rwy 25L ldg 11,395'
Rwy 25R ldg 11,490'
Rwy 6R ldg 9954'
Rwy 7R ldg 11705'
248° 6.2 NM from LOM
285
TDZE 120
243
164
285
TDZL Rwy 24R
HIRL Rwys 7R-25L, 7L-25R, 6R-24L, and 6L-24R
ILS RWY 24R
33°56'N - 118°24'W
LOS ANGELES CALIFORNIA

Figure 70

6852. If both the ram air input and drain hole of the pitot system are blocked, what airspeed indication can be expected?

1—No variation of indicated airspeed in level flight even if large power changes are made.
2—Decrease of indicated airspeed during a climb.
3—Constant indicated airspeed during a descent.
4—Zero indicated airspeed until blockage is removed.

6853. What is the highest elevation in the touchdown zone for Rwy 6R? (See Figure 71.)

1—111 feet MSL.
2—117 feet MSL.
3—126 feet MSL.
4—133 feet MSL.

6854. What is the highest elevation in the touchdown zone for Rwy 6L? (See Figure 71.)

1—100 feet MSL.
2—111 feet MSL.
3—117 feet MSL.
4—126 feet MSL.

6855. What are the landing minima for a side-step maneuver in an approach Category C airplane if the MALSR is inoperative for Rwy 6R? (See Figure 71.)

1—720/50.
2—720/2.
3—400/40.
4—400/50.

6856. What are the landing minima for a side-step maneuver in an approach Category D airplane if the MALSR is inoperative for Rwy 6R? (See Figure 71.)

1—400/50.
2—400/40.
3—720/50.
4—720/2.

6857. The speeds used to determine aircraft approach categories found in the Minimums Section of the Instrument Approach Procedure Charts are based on

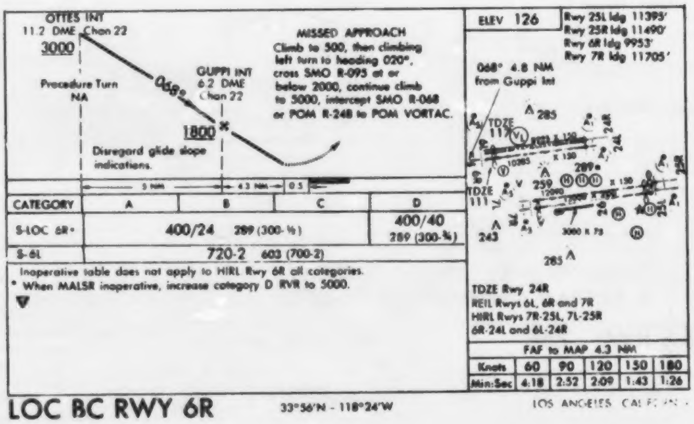
1—1.3 V_{SO} at maximum certificated weight.
2—1.3 V_A at maximum certificated landing weight.
3—1.3 times the stalling speed in landing configuration at maximum gross weight.
4—1.3 times the stalling speed in landing configuration at maximum certificated gross landing weight.

6858. What is a recommended procedure when "filing" an RNAV route for an IFR flight?

1—Request special handling in accordance with published AIM procedure.
2—Preflight check the aircraft Mode C transponder to assure proper operation.
3—Select waypoints within 200 NM of the boundary for each ARTCC.
4—Enter "RNAV Route" in the remarks section of the flight plan.

6859. When passing through an abrupt wind shear which involves a shift from a tailwind to a headwind, what power management would normally be required to maintain a constant indicated airspeed and ILS glide slope?

1—Higher than normal power initially, followed by a further increase as the wind shear is encountered, then a decrease.
2—Lower than normal power initially, followed by a further decrease as the wind shear is encountered, then an increase.
3—Higher than normal power initially, followed by a decrease as the shear is encountered, then an increase.
4—Lower than normal power initially, followed by an increase as the shear is encountered, then a decrease.



MISSED APPROACH
Climb to 500, then climbing left turn to heading 020°, cross SMO R-095 at or below 2000, continue climb to 5000, intercept SMO R-068 or POM R-248 to POM VORTAC.

Rwy 25L ldg 11395'
Rwy 25R ldg 11490'
Rwy 6R ldg 9953'
Rwy 7R ldg 11705'

CATEGORY	A	B	C	D
S-LOC 6R*	400/24 289 (300-½)			400/40 289 (300-¾)
S-6L	720-2 603 (700-2)			

Inoperative table does not apply to HIRL Rwy 6R all categories.
* When MALSR inoperative, increase category D RVR to 5000.

TDZE Rwy 24R
REIL Rwys 6L, 6R and 7R
HIRL Rwys 7R-25L, 7L-25R
6R-24L and 6L-24R

FAF to MAP 4.3 NM

Knots	60	90	120	150	180
Min:Sec	4:18	2:52	2:09	1:43	1:26

LOC BC RWY 6R 33°56'N - 118°24'W LOS ANGELES CALIFORNIA

Figure 71

6860. To determine which instrument approach category minima are applicable to a turbojet airplane, you must know the

1—V_{SO} at maximum certificated takeoff weight.
2—V_A at maximum landing weight.
3—number of engines and stall speed at the anticipated landing weight.
4—V_{SO} at maximum gross landing weight.

6861. While flying a 3° glide slope, a constant tailwind shears to a calm wind. Which conditions should the pilot expect?

1—Airspeed and pitch attitude decrease and there is a tendency to go below glide slope.
2—Airspeed and pitch attitude increase and there is a tendency to go below glide slope.
3—Airspeed and pitch attitude increase and there is a tendency to go above glide slope.
4—Airspeed and pitch attitude decrease and there is a tendency to go above glide slope.

6862. Which procedure should be followed by a pilot who is circling to land in a Category B airplane, but is maintaining a speed 5 knots faster than the maximum specified for that category?

1—Use the approach minima appropriate for Category C.
2—Use Category B minima.
3—Use Category A minima since they apply to all circling approaches.
4—Use Category D minima since they apply to all circling approaches.

6863. An airplane has a nosewheel tire pressure of 55 PSI and the main wheels' tire pressures are 135 PSI. What is the relationship, if any, between tire pressure and dynamic hydroplaning?

1—The nosewheel tire will hydroplane at a lower speed than the main wheel tires.
2—Speed and depth of water on the runway, not tire pressure, determines when dynamic hydroplaning will occur.
3—Hydroplaning will occur only on the nosewheel tire.
4—The main wheel tires will hydroplane at a lower speed than the nosewheel tire.

6864. Which of the following could be an indication that the starter relay (solenoid) has failed mechanically in the "ON" position?

1—Low loadmeter reading and normal voltage.
2—Lights brighter than normal and high voltage.
3—Low voltage and high loadmeter reading.
4—Lights brighter than normal and low loadmeter reading.

6865. Another term that describes a private carrier is

1—contract carrier.
2—general aviation carrier.
3—restricted commercial carrier.
4—common carrier.

6866. What precaution should be taken if dry ice is carried aboard an aircraft?

1—This material does not require special precautions.
2—An extra fire extinguisher should be carried.
3—A waiver to carry this material should be requested from the certificating FAA district office.
4—Proper ventilation of the aircraft should be assured.

6867. An aircraft configured for air ambulance operations should include

1—shoulder harness for all passenger seats.
2—four-point floor anchor points and approved web-type restraints for securing stretchers.
3—a seat near the patient for an attendant.
4—a nitrous oxide supply and breathing mask for in-flight patient sedation.

6868. Where should a non-ambulatory handicapped passenger be seated to expeditiously accomplish emergency evacuation?

1—At the beginning of a line of passengers that would be evacuated through an overwing exit.
2—Near the beginning of a line of passengers that would be evacuated through a main exit.
3—At the approximate center of a line of passengers that would be evacuated through a floor-level exit.
4—Near the end of a line of passengers that would be evacuated through a floor-level, non-overwing exit.

6869. An ambulatory handicapped passenger should be seated in an area where emergency evacuation can be accomplished through

1—the aft normal or emergency exit.
2—an overwing exit.
3—the main exit.
4—a floor-level exit.

6870. Which statement best defines the term "holding out?"

1—Carriage of property for hire for one customer in intrastate commerce.
2—Offers to the public the carriage of persons and property for hire either intrastate or interstate.
3—Carriage of persons or property for hire for a few selected customers on an intrastate basis.
4—Carriage of cargo for an industrial firm on an intrastate basis.

6871. If not excepted, what label must be placed on a package containing acetone? (See Appendix 2, pages 20 through 34.)

1—No label is required.
2—POISON.
3—CORROSIVE.
4—FLAMMABLE LIQUID.

6872. What is the maximum net quantity of acetyl bromide in one package, that may be carried in a cargo-only aircraft? (See Appendix 2, pages 20 through 34.)

1—1 quart.
2—1 gallon.
3—No limit is specified.
4—None.

6873. What is the maximum net quantity of acetylene in one package, that may be carried in a passenger-carrying aircraft? (See Appendix 2, pages 20 through 34.)

1—Any amount is forbidden.
2—300 pounds.
3—No limit is specified.
4—30 pounds.

6874. If not excepted, what label must be placed on a package containing allethrin? (See Appendix 2, pages 20 through 34.)

1—ORM-A.
2—None.
3—CORROSIVE.
4—POISON.

6875. What is the maximum net quantity of aluminum hydride in one package, that may be carried in a passenger-carrying aircraft? (See Appendix 2, pages 20 through 34.)

1—100 pounds.
2—No limit is specified.
3—25 pounds.
4—Any amount is forbidden.

6876. Hazardous material shipped in an aircraft operated under FAR Part 135 must be described and certified on a shipping paper. For what period of time must the originating aircraft operator retain one copy of this document? (See Appendix 2, pages 20 through 34.)

1—30 days.
2—60 days.
3—90 days.
4—180 days.

6877. Certain classes of hazardous material may be shipped by air but are not permitted aboard passenger-carrying aircraft. How must such material be labeled? (See Appendix 2, pages 20 through 34.)

1—DANGEROUS.
2—HAZARDOUS/CLASS X.
3—RESTRICTED.
4—CARGO AIRCRAFT ONLY.

6878. The aircraft operator discovers that the label on a container of hazardous material is missing. How should the appropriate replacement label be determined? (See Appendix 2, pages 20 through 34.)

1—Shipping papers.
2—Hazardous materials index.
3—Hazardous materials table of CFR 49, Part 172.
4—Commodity identification list.

6879. An operator makes a telephone report of an incident involving fire during the loading of hazardous materials. Within what period of time must a report be submitted? (See Appendix 2, pages 20 through 34.)

1—24 hours.
2—48 hours.
3—10 days.
4—15 days.

6880. What is the maximum weight of hazardous material (other than nonflammable compressed gas) that may be carried in an accessible cargo compartment of a passenger-carrying airplane? (See Appendix 2, pages 20 through 34.)

1—Unless otherwise specifically permitted, 50 pounds.
2—10 pounds, if classified as "corrosive."
3—25 pounds, if classified as ORM-D.
4—Unless otherwise specifically permitted, 75 pounds.

6881. If transported in a passenger-carrying airplane, what is the maximum combined transportation indices of packages containing radioactive materials? (See Appendix 2, pages 20 through 34.)

1—150.
2—100.
3—50.
4—25.

6882. What is the maximum number of packages of ORM material that may be transported in a passenger-carrying airplane? (See Appendix 2, pages 20 through 34.)

1—No limit applies.
2—A number whose combined transportation indices total 50.
3—Ten, if the combined weight of the packages exceeds 50 pounds.
4—A number whose combined transportation indices total 100.

6883. Which class of hazardous material must be loaded aboard an aircraft in a position that allows no contact with containers of corrosive material? (See Appendix 2, pages 20 through 34.)

1—Organic chemicals.
2—ORM-D material.
3—Oxidizing materials.
4—Catalytic agents.

6884. Which procedure must be followed if an operator, when loading magnetized material, cannot avoid placing it in a position where it affects the accuracy of the magnetic compass? (See Appendix 2, pages 20 through 34.)

1—Placard the compass "unreliable."
2—Rely solely on electronic navigation.
3—Make a special compass swing and calibration.
4—Restrict flight to VFR, utilizing pilotage navigation.

6885. What is the maximum quantity of flammable liquid fuel that may be carried in the cabin of a small non-scheduled, passenger-carrying aircraft being operated in a remote area of the United States? (See Appendix 2, pages 20 through 34.)

1—5 gallons.
2—10 gallons.
3—15 gallons.
4—20 gallons.

6886. What is the minimum distance that a package of radioactive materials bearing the label "RADIOACTIVE YELLOW II," and having a transport index of 15, may be placed from a space continuously occupied by people? (See Appendix 2, pages 20 through 34.)

1—2 feet.
2—3 feet.
3—4 feet.
4—5 feet.

6887. Who should be notified if there is a suspected radioactive contamination involving a radioactive materials shipment and it is determined that radiological advice is needed? (See Appendix 2, pages 20 through 34.)

1—Office of Hazardous Materials Regulation.
2—National Transportation Safety Board.
3—U.S. Energy Research and Development Administration.
4—Nuclear Regulatory Commission.

6888. Which is the key factor that determines that an operator is a common carrier rather than a private carrier?

1—Engaging in intrastate carriage of persons or property.
2—Expression of willingness to carry all customers.
3—Special adaptation of transportation service to the individual needs of one company.
4—Engaging in a limited operation involved in the intrastate carriage of manufactured components for one company.

6889. An operator who occasionally refuses to transport persons or property, and who holds out on an informal basis,

1—may be considered to meet the criteria for common carriage.
2—may be considered a common carrier only if the transportation of persons or property is interstate.
3—is a private carrier although some operations are interstate.
4—is a private carrier unless operating under a contract, charter, or mail agreement.

6890. Which is a factor that tends to establish an operator as a private carrier?

1—Charter flying for only one organization although flights are open to the public.
2—Carriage of selected customers on a long-term basis where no holding out is involved.
3—Making known publicly, through reputation (not advertising), that all customers will be provided transportation service.
4—Making known publicly, through reputation (or advertising), that the operator will carry only certain kinds of cargo.

6891. A carrier offers transportation pursuant to separately negotiated contracts, and is holding out by reputation only

1—is engaged in private carriage whether operations are intrastate or interstate.
2—is a common carrier only if it provides component transportation for more than three manufacturing concerns.
3—may be classified as a common carrier.
4—meets the criteria of private carriage if the contracts stipulate interstate operations.

6892. An intrastate commercial operator meets the criteria that has been established for a common carrier if it

1—carries only employees of one corporation for hire within the boundaries of one state, on a long-term basis.
2—contracts to carry industrial parts on a daily basis on two contracts between widely separated points within one state.
3—does not hold out air transportation service to the public and operates with very few contracts.
4—offers to carry manufactured components under 15 individual contracts on interstate flights.

6893. On a number of occasions an operator makes verbal offers to senior citizens' groups to transport them in his airplane to a casino located in another state. The operator would be considered to be

1—engaged in private carriage although each passenger is charged a nominal fee to cover the expense of gratuities.
2—a common carrier if compensation is received from the passengers.
3—a private carrier since there is no published holding out of services.
4—engaged in common carriage if the trip generates a profit and private carriage if no profit is realized.

6894. Which activity is not considered to be a form of holding out by the pilot of a light twin-engine airplane?

1—Yellow page advertisement charter flight services to sports events.
2—Word-of-mouth information that charter flight services are continuously available.
3—Full-time employment as pilot of a company-owned airplane.
4—Posting a schedule of available charter flight services in a fixed-base operator's pilot lounge.

6895. You are qualified in only single-engine type helicopters. What recent experience must you have had to be scheduled for a night flight in air transportation in this type helicopter?

1—Within the preceding 60 days, three normal takeoffs and three landings, two of which must have been from approaches in autorotation, day or night.
2—Within the preceding 90 days, five takeoffs and landings; two landings must have been from approaches in autorotation at night.
3—Within the preceding 60 days, at least three normal takeoffs and landings.
4—Within the preceding 90 days three takeoffs and landings; two landings must have been from approaches in autorotation, and one of these must have been at night.

6896. You are qualified in both single-engine and multiengine type helicopters. What recent experience must you have had within the preceding 90 days to make scheduled night flights in air transportation in both types?

1—Three normal takeoffs and landings in either type in day or night conditions.
2—Three takeoffs and landings in each type; two landings in the single-engine type must have been from an autorotative approach, and one of these must have been made at night.
3—Three normal takeoffs and landings in both types in day or night conditions.
4—Three takeoffs and landings in either type; two approaches must have been from an autorotative approach or with one engine inoperative, appropriate to the type in which qualifying.

6897. What minimum recent landing experience is required by FAR Part 127 for a pilot to serve as second in command in two different type single-engine air carrier helicopters during day flight only?

1—Three landings in either type during the past 90 days, two of which must have been made from approaches in autorotation.
2—Three landings in each type during the past 90 days. Two of the three in each type must have been made from approaches in autorotation.
3—Three landings in either type during the past 60 days, one of which must have been made from an approach in autorotation.
4—Three landings in each type during the past 60 days. One of the three in each type must have been made from an approach in autorotation.

6898. You are scheduled as second in command of a single-engine air carrier helicopter on a night flight. You meet the recency-of-experience requirements stated in FAR Part 127 if,

1—within the preceding 90 days, you have performed a minimum of three takeoffs and landings in a helicopter of the type you are to fly. Two of the landings must have been made from autorotative approaches, with at least one performed at night.
2—you have maintained current route qualifications, regardless of the number of takeoffs and landings you have performed.
3—within the preceding 90 days, you have performed a minimum of three night takeoffs and landings in any helicopter, with two of the landings from autorotative approaches.
4—within the preceding 60 days, you have performed a minimum of three night landings in a helicopter of the type you are to fly.

6899. To act as pilot in command in two types of helicopters in operations conducted under FAR Part 127, your line check must be successfully completed each

1—12 calendar months and may be taken in either helicopter type in which you act as pilot in command.
2—6 calendar months in both helicopter types in which you act as pilot in command.
3—12 calendar months in both helicopter types in which you act as pilot in command.
4—6 calendar months and must be taken alternately in each helicopter type in which you act as pilot in command.

6900. You are pilot in command in both types A and B helicopters. The line check, in type B, was completed on March 15. When is your next line check due?

1—September, and it must be taken in type A.
2—The following March, and it may be taken in either type A or B.
3—September, and it may be taken in either type A or B.
4—The following March, and it must be taken in type A.

6901. You qualified as pilot in command in air carrier operations in one type helicopter on June 25, the current year. To remain qualified, you must take your next proficiency check no later than the last day of

1—July, the following year.
2—November, the current year.
3—June, the following year.
4—January, the following year.

6902. On May 14, the current year, you qualified as pilot in command in air carrier operations in one type helicopter. To remain qualified, you must take your next proficiency check no later than

1—May 31, the following year.
2—June 14, the following year.
3—November 14, the current year.
4—December 31, the current year.

6903. To maintain route qualification, a single-engine air carrier helicopter pilot must make at least one trip on the route no later than

1—90 days after the date route qualification was established.
2—3 months after the month in which route qualification was established.
3—6 months after the month in which route qualification was established.
4—12 months after the month in which route qualification was established.

6904. A multiengine air carrier helicopter pilot must re-establish route qualifications after an absence from a route for a period of more than how many consecutive months?

1—18.
2—12.
3—6.
4—3.

6905. The flight time limitations established for flight crewmembers for operations under FAR Part 127 refer to

1—flight time in air transportation only.
2—all flight time in any aircrew position.
3—only commercial flying in an aircrew position in which FAR Part 127 operations are conducted.
4—all commercial flying in any aircrew position.

6906. As a pilot in command of an air carrier helicopter, your total flight time may not exceed

1—1,000 hours in a calendar year and 80 hours in a calendar month in all commercial flying.
2—30 hours in any 7 consecutive days and 1,000 hours in a calendar year in all commercial flying.
3—100 hours in a calendar month and 1,200 hours in a calendar year in scheduled air transportation.
4—25 hours in a calendar week and 100 hours in a calendar month in scheduled air transportation.

6907. To remain qualified to act as pilot in command of an air carrier helicopter, when must a pilot renew his/her First-Class Medical Certificate which is dated May 7?

1—On or before November 30.
2—No later than October 31.
3—On or before December 31.
4—No later than November 7.

6908. When must you renew your First-Class Medical Certificate, dated March 15, in order to remain qualified to act as pilot in command of an air carrier helicopter?

1—No later than August 31.
2—On or before September 30.
3—No later than October 31.
4—On or before September 15.

6909. Your First-Class Medical Certificate is dated June 30, the current year. To remain qualified to act as pilot in command of an air carrier helicopter, you must renew this medical certificate on or before the last day of

1—November, the current year.
2—December, the current year.
3—January, the following year.
4—February, the following year.

6910. Except for takeoff and landing, what is the minimum altitude a helicopter, operating VFR as an air taxi, can fly over a congested area?

1—1,000 feet AGL.
2—8,000 feet AGL.
3—5,000 feet AGL.
4—300 feet AGL.

6911. In addition to a two-way radio capable of communicating with ATC on appropriate frequencies, which equipment is your helicopter required to have to operate within a terminal control area? (Letter of agreement not applicable.)

1—A VOR or TACAN receiver.
2—DME, a VOR or TACAN receiver, and an appropriate transponder beacon.
3—An appropriate transponder beacon.
4—DME and a VOR or TACAN receiver.

6912. Which flight visibility and distance from clouds is required for a VFR helicopter flight outside controlled airspace at 3,500 feet MSL over terrain with an elevation of 1,900 feet?

1—Visibility – 1 mile. Distance from clouds – 1,000 feet below, 1,000 feet above, and 1,000 feet horizontal.
2—Visibility – 3 miles. Distance from clouds – 1,000 feet below, 1,000 feet above, and 1 mile horizontal.
3—Visibility – 1 mile. Distance from clouds – 500 feet below, 1,000 feet above, 2,000 feet horizontal.
4—Visibility – 3 miles. Distance from clouds – 500 feet below, 1,000 feet above, and 2,000 feet horizontal.

6913. If cargo must be carried in the passenger compartment of a helicopter operated under FAR Part 127, which operational consideration must be observed?

1—It must be packaged or covered to avoid possible injury to passengers.
2—It must be carried on the floor, aft of all passengers, properly secured by suitable tiedown devices.
3—It may be stowed so that it restricts the use of regular exits but not emergency exits.
4—It must be carried in approved bins or racks.

6914. A helicopter designed to accommodate 10 passengers and operated under FAR Part 127 is required to carry how many hand fire extinguishers in the passenger compartment?

1—One.
2—Two.
3—Three.
4—Four.

6915. No person may operate a helicopter under FAR Part 127 unless it is equipped with

1—a rotor brake and means of indicating full or partial engagement.
2—an oil temperature and fuel pressure indicator for each engine.
3—a fuel flow indicator, fuel warning light, and oil temperature indicator for each engine.
4—an oil pressure indicator and fuel flow indicator with associated warning light for each engine.

6916. Passenger-carrying helicopters, operating under FAR Part 127, must have a source of power independent of the main lighting system to illuminate each passenger emergency exit marking. When such lights require arming of the system to function automatically, the system must be armed

1—for the entire flight in single-engine helicopters.
2—prior to each takeoff and landing.
3—for both normal and emergency landings but not takeoffs.
4—prior to starting engine(s) in all types of helicopters.

6917. A single-engine helicopter with a separate passenger and crew compartment is operated under FAR Part 127 without a cabin attendant. During which periods must the "seatbelts" and "no smoking" signs be illuminated?

1—Only during takeoffs and landings.
2—Seatbelts, only during takeoffs and landings. No smoking must be on for the entire flight.
3—No smoking, only during takeoffs and landings. Seatbelts must be on for the entire flight.
4—Both must be on for the entire flight.

6918. When must the cockpit voice recorder of a large transport category helicopter be operated?

1—Continuously from the start of the use of the checklist to completion of final checklist.
2—From just prior to starting to taxi and remain on for the remainder of the flight.
3—From prior to engine start and remain on until just prior to engine shutdown.
4—From engine start to the completion of air taxi or ground taxi after completion of flight.

6919. For operations over routes navigated by pilotage, an air carrier helicopter shall be equipped with radio equipment needed to

1—maintain direct contact with the air carrier operations office, from any point en route.
2—communicate with at least an appropriate ground station in the vicinity and with other helicopters operated by the air carrier.
3—contact the appropriate airport towers from any point en route.
4—communicate directly with the appropriate FAA weather office, from any point en route.

6920. In an emergency situation, the pilot in command may deviate from an authorized route. In the event of a deviation of more than 10 miles, the pilot shall submit a written report to the Administrator within

1—48 hours.
2—24 hours.
3—10 days.
4—7 days.

6921. How much of the information recorded by a required cockpit voice recorder may be erased during normal operation of the recorder?

1—Information recorded more than 15 minutes earlier.
2—No more than 90 minutes of recorded information.
3—Information recorded more than 30 minutes earlier.
4—Any amount of information so long as it does not pertain directly to the operation of the aircraft or the conduct of the flight.

6922. At 1715Z, an air carrier flight lands at an intermediate heliport. If the flight is delayed, what is the latest time it may depart for the destination heliport without a new flight release?

1—1745Z.
2—1815Z.
3—1845Z.
4—1915Z.

6923. A scheduled helicopter air carrier flight lands at an intermediate airport at 1240Z. After what time is a new flight release required?

1—1440Z.
2—1340Z.
3—1310Z.
4—1255Z.

6924. What is the maximum period of time a flight may remain at an intermediate heliport without requiring a new flight release?

1—30 minutes.
2—45 minutes.
3—1 hour.
4—2 hours.

6925. A helicopter operating under FAR Part 127 may not be released for a VFR flight unless meteorological conditions allow

1—sufficient air-to-air visibility to properly control the helicopter's attitude without reference to flight instruments.
2—sufficient visual ground reference during day operations, or ground reference lights during night operations, to control the helicopter.
3—sufficient horizon reference at cruising altitude to enable the pilot to properly control the helicopter.
4—operations in conformity with the RVR minima of all heliports on the scheduled route.

6926. In order to be released for a VFR flight in accordance with FAR Part 127, a helicopter must carry enough fuel to fly to the heliport to which released plus a minimum amount of additional fuel to fly at least

1—10 minutes.
2—20 minutes.
3—30 minutes.
4—45 minutes.

6927. Under which circumstances may two children occupy one seat and be secured by one safety belt in a helicopter operating under FAR Part 127? If the belt and seat strength requirements are not exceeded and the children have

1—a combined weight of 250 pounds or less.
2—reached their second but not their twelfth birthdays.
3—a combined weight of 200 pounds or less and are less than 10 years old.
4—the consent of a parent or legal guardian and are less than 10 years old.

6928. What minimum altitude should a helicopter maintain while en route?

1—Over congested areas such as towns, no lower than 1,000 feet over the highest obstacle within a horizontal radius of 2,000 feet of the helicopter.
2—That specifically prescribed by the air carrier for your operation.
3—Over other than congested areas, no lower than 500 feet above the surface, and in no case closer than 500 feet to any structure.
4—That prescribed by the Administrator.

6929. The minimum altitude for any air carrier helicopter route or route segment is

1—500 feet above the highest terrain feature.
2—prescribed by the Administrator.
3—established by the air carrier.
4—200 feet above the highest terrain feature.

6930. What effect would a light crosswind of 5 to 7 knots have on the trailing vortices behind a large transport type helicopter which has just completed an approach to a landing?

1—The strength of both vortices would be rapidly diminished by a light crosswind component.
2—The downwind vortex will remain in the touchdown zone longer than the upwind vortex.
3—Both vortices would move downwind at a greater rate than if the surface wind was a direct headwind.
4—The upwind vortex would tend to remain in the touchdown zone longer than the downwind vortex.

6931. Copies of the load manifest and flight release shall be retained by a FAR Part 127 operator for at least

1—30 days.
2—60 days.
3—6 months.
4—1 year.

6932. Select the UNICOM frequencies normally assigned to stations at landing areas used exclusively as heliports.

1—122.7 and 122.8 MHz.
2—122.7 and 122.05 MHz.
3—123.0 and 123.9 MHz.
4—123.05 and 123.075 MHz.

6933. Transverse flow effect is a phenomenon associated with helicopter flight which

1—results from tail rotor transient resonance.
2—results from the reverse airflow on the inboard region of the retreating blade.
3—is most noticeable during autorotation.
4—is most noticeable on entry into effective translational lift.

6934. What is meant by the term translating tendency?

1—The tendency of the rotor blade to produce a region of low pressure ahead of and in the sphere of blade rotation.
2—The increase in rotor efficiency as airspeed reaches approximately 15 MPH.
3—The tendency of the entire helicopter to move in the direction of tail rotor thrust.
4—The tendency of the rotor blade to increase or decrease its rotational velocity.

6935. What characteristic is provided by a helicopter rotor blade airfoil which is symmetrical?

1—It balances the center of pressure changes induced by spanwise variations of rotational velocity.
2—It ensures control of blade pitching moments induced by flapping action.
3—It limits the movement of the center of pressure forward and rearward along the surface of the airfoil.
4—It compensates for unequal spanwise lift distribution.

6936. The purpose of the lead–lag (drag) hinge in a three-bladed, fully articulated helicopter rotor system is to compensate for

1—Coriolis effect.
2—lateral instability during autorotation.
3—geometric unbalance.
4—dissymmetry of lift.

6937. Which is a major warning of approaching retreating blade stall?

1—High-frequency vibration.
2—Tendency to roll opposite the direction of the stalled side of the rotor.
3—Pitchup of the nose.
4—Lateral oscillation of the rotor.

6938. During a recovery from retreating blade stall, the pilot should not

1—decrease forward speed.
2—increase rotor RPM.
3—increase collective pitch.
4—descend to a lower altitude.

6939. When operating a helicopter at high forward airspeeds, which condition is most likely to produce retreating blade stall?

1—High rotor RPM.
2—Turbulent air.
3—Low gross weight.
4—Low density altitude.

6940. What corrective action should be taken if ground resonance is encountered at low rotor RPM?

1—Close the throttle and increase collective pitch.
2—Increase RPM and apply cyclic as required to stop the oscillation.
3—Increase power and takeoff.
4—Reduce collective pitch and close the throttle.

6941. Loading a helicopter so that the CG is aft of the rearward limit may result in

1—the CG moving forward as the flight continues if the fuel is forward of the rotor mast.
2—insufficient aft cyclic control to decelerate properly during a powered or autorotative approach.
3—insufficient forward cyclic control to fly in the upper allowable airspeed range.
4—the pilot being unable to recognize this condition when hovering in a strong headwind.

6942. While maintaining a constant blade pitch angle during an autorotation (collective pitch full down), an increase in rotor RPM will be associated with

1—a decrease in airflow through the rotor system.
2—a decrease in airspeed.
3—low gross weight.
4—an increase in airflow through the rotor system.

6943. While en route, in level cruising flight in a helicopter, a pilot experiences low-frequency vibrations (100 to 400 cycles per minute). These vibrations are normally associated with the

1—engine.
2—cooling fan.
3—main rotor.
4—tail rotor.

6944. You inadvertently place your helicopter in an attitude and power condition that results in settling with power. You can recover with the least loss of altitude by

1—increasing forward speed and partially lowering collective pitch.
2—decreasing forward speed.
3—increasing forward speed and raising collective pitch.
4—decreasing forward speed and partially raising collective pitch.

6945. During the en route phase of flight, what limits th high airspeed potential of a helicopter?

1—Harmonic resonance.
2—Retreating blade stall.
3—Rotor RPM limitations.
4—Tail rotor flutter.

6946. While en route in a helicopter, the pilot should maintain the airspeed below V_{NE}. In most helicopters, this speed

1—decreases as altitude decreases.
2—remains the same at all altitudes.
3—decreases up to critical altitude and increases above critical altitude.
4—is lower at high altitude than at low altitude.

6947. When operating at high forward airspeeds in a helicopter, which condition is least likely to be associated with retreating blade stall?

1—Turbulence.
2—High density altitude.
3—High gross weight.
4—High rotor RPM.

6948. You are planning to depart from a high altitude airport in a helicopter. Which condition would most adversely affect performance?

1—Lower than standard temperature and high relative humidity.
2—Higher than standard temperature and low relative humidity.
3—Lower than standard temperature and low relative humidity.
4—Higher than standard temperature and high relative humidity.

6949. During a pinnacle-type approach to a rooftop heliport in conditions of high wind and turbulence, the pilot should make a

1—normal approach, maintaining a higher than normal airspeed.
2—shallow approach, maintaining a constant line of descent with cyclic.
3—steeper than normal approach, maintaining the desired angle of descent with collective.
4—normal approach, maintaining a slower than normal rate of descent with cyclic.

6950. What is the Category A maximum takeoff gross weight for a helicopter under the following conditions? (See Appendix 2, page 14 and Appendix 3, page 1.)

Pressure altitude..2,500 ft.
Temperature..ISA +3° C

1—14,000 lb.
2—14,550 lb.
3—14,850 lb.
4—15,800 lb.

6951. What is the Category A maximum takeoff gross weight for a helicopter under the following conditions? (See Appendix 2, page 14 and Appendix 3, page 1.)

Pressure altitude..3,000 ft.
Temperature..ISA +2° C

1—16,000 lb.
2—15,200 lb.
3—15,000 lb.
4—14,800 lb.

6952. What is the Category A maximum takeoff gross weight for a helicopter under the following conditions? (See Appendix 2, page 14 and Appendix 3, page 1.)

Pressure altitude..2,000 ft.
Temperature..ISA –2° C

1—14,900 lb.
2—15,500 lb.
3—15,700 lb.
4—16,000 lb.

6953. What is the Category B maximum takeoff gross weight under the following conditions? (See Appendix 2, page 14 and Appendix 3, page 2.)

Pressure altitude..8,000 ft.
Temperature..ISA +4° C

1—16,750 lb.
2—18,000 lb.
3—18,400 lb.
4—18,800 lb.

6954. What is the Category B maximum takeoff gross weight under the following conditions? (See Appendix 2, page 14 and Appendix 3, page 2.)

Pressure altitude..5,500 ft.
Temperature..ISA +11° C

1—18,000 lb.
2—18,400 lb.
3—18,700 lb.
4—19,000 lb.

6955. What is the Category B maximum takeoff gross weight under the following conditions? (See Appendix 2, page 14 and Appendix 3, page 2.)

Pressure altitude..7,500 ft.
Temperature..ISA +4° C

1—18,000 lb.
2—18,250 lb.
3—18,500 lb.
4—19,000 lb.

6956. What power is required to hover out of ground effect under these conditions? (See Appendix 3, page 4.)

Pressure altitude..4,500 ft.
Gross weight..16,500 lb.
Temperature..+6° C
Headwind..6 knots

1—2,090 SHP.
2—1,980 SHP.
3—1,900 SHP.
4—1,820 SHP.

6957. What power is required to hover out of ground effect under these conditions? (See Appendix 3, page 4.)

Pressure altitude..3,500 ft.
Gross weight..16,600 lb.
Temperature..–10° C
Headwind..12 knots

1—1,580 SHP.
2—1,620 SHP.
3—1,660 SHP.
4—1,700 SHP.

6958. What power is required to hover out of ground effect under these conditions? (See Appendix 3, page 4.)

Pressure altitude..4,500 ft.
Gross weight..16,900 lb.
Temperature..–8° C
Headwind..6 knots

1—1,800 SHP.
2—1,830 SHP.
3—1,860 SHP.
4—1,880 SHP.

6959. What power is required to hover out of ground effect under these conditions? (See Appendix 3, page 4.)

Pressure altitude..6,500 ft.
Gross weight..16,500 lb.
Temperature..–5° C
Headwind..12 knots

1—1,720 SHP.
2—1,790 SHP.
3—1,830 SHP.
4—1,870 SHP.

6960. What power is required to hover in ground effect under these conditions? (See Appendix 3, page 5.)

Pressure altitude..4,500 ft.
Gross weight..16,500 lb.
Temperature..+6° C
Headwind..6 knots

1—1,580 SHP.
2—1,620 SHP.
3—1,660 SHP.
4—1,700 SHP.

6961. What power is required to hover in ground effect under these conditions? (See Appendix 3, page 5.)

Pressure altitude	3,500 ft.
Gross weight	16,600 lb.
Temperature	–10° C
Headwind	12 knots

1—1,530 SHP.
2—1,560 SHP.
3—1,620 SHP.
4—1,680 SHP.

6962. What power is required to hover in ground effect under these conditions? (See Appendix 3, page 5.)

Pressure altitude	6,500 ft.
Gross weight	16,500 lb.
Temperature	–5° C
Headwind	12 knots

1—1,505 SHP.
2—1,570 SHP.
3—1,610 SHP.
4—1,680 SHP.

6963. What power is required to hover in ground effect under these conditions? (See Appendix 3, page 5.)

Pressure altitude	4,500 ft.
Gross weight	16,900 lb.
Temperature	–8° C
Headwind	6 knots

1—1,655 SHP.
2—1,670 SHP.
3—1,705 SHP.
4—1,730 SHP.

6964. A pilot elects to continue the takeoff after an engine fails at the critical decision point. What is the accelerating distance from the critical decision point to the takeoff safety speed under the following conditions? (See Appendix 3, page 6.)

Gross weight	15,800 lb.
Temperature	+13° C

1—210 ft.
2—250 ft.
3—270 ft.
4—310 ft.

6965. A pilot elects to continue the takeoff after an engine fails at the critical decision point. What is the accelerating distance from the critical decision point to the takeoff safety speed under the following conditions? (See Appendix 3, page 6.)

Gross weight	15,300 lb.
Temperature	+7° C

1—200 ft.
2—240 ft.
3—280 ft.
4—310 ft.

6966. A pilot elects to continue the takeoff after an engine fails at the critical decision point. What is the accelerating distance from the critical decision point to the takeoff safety speed with these conditions? (See Appendix 3, page 6.)

Gross weight	14,700 lb.
Temperature	+17° C.

1—235 ft.
2—265 ft.
3—295 ft.
4—335 ft.

6967. A pilot elects to continue the takeoff after an engine fails at the critical decision point. What is the accelerating distance from the critical decision point to the takeoff safety speed with these conditions? (See Appendix 3, page 6.)

Gross weight	15,300 lb.
Temperature	12° C.

1—170 ft.
2—200 ft.
3—250 ft.
4—285 ft.

6968. At what pressure altitude is forward climb performance reduced to 1,100 ft./min. if the temperature is +9° C? (See Appendix 3, page 7.)

1—9,000 feet.
2—9,500 feet.
3—11,500 feet.
4—12,000 feet.

6969. At what pressure altitude is forward climb performance reduced to 1,500 ft./min. if the temperature is –3° C? (See Appendix 3, page 7.)

1—7,300 feet.
2—7,800 feet.
3—8,300 feet.
4—8,700 feet.

6970. At what pressure altitude is forward climb performance reduced to 1,450 ft./min. if the temperature is –5° C? (See Appendix 3, page 7.)

1—6,950 feet.
2—7,250 feet.
3—8,550 feet.
4—8,850 feet.

6971. At what pressure altitude is forward climb performance reduced to 1,250 ft./min. if the temperature is +5° C? (See Appendix 3, page 7.)

1—8,150 feet.
2—8,550 feet.
3—8,800 feet.
4—9,050 feet.

2. Determine the average climb performance between 00 feet and 7,500 feet pressure altitude under the owing conditions. (See Appendix 3, page 8.)

mperature at 3,000 ft. .... +23° C
mperature at 7,500 ft. .... Standard

—1,200 ft./min.
—1,300 ft./min.
—1,400 ft./min.
—1,500 ft./min.

73. Determine the average climb performance between 500 feet and 7,000 feet pressure altitude under the llowing conditions. (See Appendix 3, page 8.)

emperature at 2,500 ft. .... +27° C
emperature at 7,000 ft. .... 0° C

—1,500 ft./min.
—1,400 ft./min.
—1,300 ft./min.
—1,200 ft./min.

974. What is the average climb performance between 1,300 feet and 8,400 feet pressure altitude with these conditions? (See Appendix 3, page 8.)

Temperature at 1,300 ft. .... +29° C
Temperature at 8,400 ft. .... –5° C

1—1,500 ft./min.
2—1,450 ft./min.
3—1,350 ft./min.
4—1,250 ft./min.

6975. What is the average climb performance between 2,300 feet and 7,500 feet pressure altitude with these conditions? (See Appendix 3, page 8.)

Temperature at 2,300 ft. .... +18° C
Temperature at 7,500 ft. .... +7° C

1—1,550 ft./min.
2—1,450 ft./min.
3—1,350 ft./min.
4—1,250 ft./min.

6976. Refer to the Height Velocity Chart (see Appendix 3, page 9. From which of the following height and indicated airspeed conditions could you not expect to make a safe autorotative landing in the event of power failure?

1—40 feet; 42 knots.
2—40 feet; 12 knots.
3—55 feet; 47 knots.
4—250 feet; 8 knots.

6977. At what altitude will the loss of one engine result in a 50 ft./min. rate of descent if the temperature is +5° C? (See Appendix 3, page 10.)

1—6,000 feet.
2—4,500 feet.
3—3,700 feet.
4—2,700 feet.

6978. At what pressure altitude will the loss of one engine result in a 100 ft./min. rate of descent if the temperature is standard? (See Appendix 3, page 10.)

1—1,600 feet.
2—2,800 feet.
3—3,400 feet.
4—5,000 feet.

6979. What forward climb performance would result from the loss of one engine at 5,500 feet if the temperature is +2° C? (See Appendix 3, page 10.)

1—50 ft./min. climb.
2—100 ft./min. descent.
3—100 ft./min. climb.
4—75 ft./min. descent.

6980. What forward climb performance would result from the loss of one engine at 4,500 feet if the temperature is +5° C? (See Appendix 3, page 10.)

1—100 ft./min. climb.
2—50 ft./min. descent.
3—100 ft./min. descent.
4—150 ft./min. descent.

6981. What is the Category B landing distance from a 50-foot height to a stop on a hard surface runway with one engine inoperative under the following conditions? (See Appendix 3, page 12.)

Gross weight .... 15,400 lb.
Pressure altitude .... 2,700 ft.
Temperature .... –10° C

1—280 ft.
2—285 ft.
3—290 ft.
4—295 ft.

6982. What is the Category B landing distance from a 50-foot height to a stop on a hard surface runway with one engine inoperative under the following conditions? (See Appendix 3, page 12.)

Gross weight .... 14,500 lb.
Pressure altitude .... 4,800 ft.
Temperature .... Standard

1—265 ft.
2—275 ft.
3—285 ft.
4—295 ft.

6983. What is the Category B landing distance from a 50-foot height to a stop on a hard surface runway with one engine inoperative under the following conditions? (See Appendix 3, page 12.)

Gross weight .... 15,500 lb.
Pressure altitude .... 3,250 ft.
Temperature .... +5° C

1—295 ft.
2—305 ft.
3—315 ft.
4—325 ft.

6984. What is the Category B landing distance from a 50-foot height to a stop on a hard surface runway with one engine inoperative under the following conditions? (See Appendix 3, page 12.)

Gross weight	16,500 lb.
Pressure altitude	4,750 ft.
Temperature	+5° C

1—297 ft.
2—312 ft.
3—327 ft.
4—342 ft.

6985. Determine the never-exceed speed (V_{NE}). (See Appendix 3, pages 13 and 28.)

Pressure altitude	6,000 ft.
Takeoff gross weight	18,000 lb.
Temperature	+85° F

1—94 knots.
2—101 knots.
3—110 knots.
4—118 knots.

6986. Determine the never-exceed speed (V_{NE}). (See Appendix 3, pages 13 and 28.)

Pressure altitude	8,500 ft.
Takeoff gross weight	17,500 lb.
Temperature	+75° F

1—104 knots.
2—98 knots.
3—87 knots.
4—82 knots.

6987. Determine the never-exceed speed (V_{NE}). (See Appendix 3, pages 13 and 28.)

Pressure altitude	7,300 ft.
Takeoff gross weight	18,500 lb.
Temperature	+61° F

1—90 knots.
2—93 knots.
3—99 knots.
4—104 knots.

6988. Determine the never-exceed speed (V_{NE}). (See Appendix 3, pages 13 and 28.)

Pressure altitude	6,500 ft.
Takeoff gross weight	17,750 lb.
Temperature	+63° F

1—96 knots.
2—100 knots.
3—109 knots.
4—113 knots.

6989. What is the CG if a helicopter is loaded according to the partially completed Weight and Balance Clearance on page 16 of Appendix 3. (See loading tables on pages 18, 19, and 20 of Appendix 3.)

1—275.8 inches aft of datum.
2—at the aft limit.
3—2.4 inches forward of the aft limit.
4—9.0 inches aft of the main rotor centroid.

6990. A loaded helicopter weighs 18,500 pounds and its CG is 274.5 inches aft of datum. What is the effect of shifting 150 pounds of cargo from the aft bin to the baggage pod? (See Appendix 3, pages 14 through 20.)

1—Forward CG displacement 2.1 inches.
2—Aft CG displacement 2.1 inches.
3—Forward CG displacement 3.8 inches.
4—Aft CG displacement 3.8 inches.

6991. A loaded helicopter weighs 18,000 pounds and has a Mom./100 of 49,800. What is the effect if 500 pounds of the 950 pounds of fuel contained in the forward tank is consumed? (See Appendix 3, pages 14 through 20.)

1—Aft CG displacement .8 inch, within limits.
2—Aft CG displacement 2.1 inches, out of limits.
3—Aft CG displacement 2.8 inches, out of limits.
4—Aft CG displacement 1.6 inches, within limits.

6992. A loaded helicopter weighs 18,020 pounds and its CG is 276.3 inches aft of datum. What is the effect of shifting 200 pounds of baggage from the forward bin to the baggage pod? (See Appendix 3, pages 14 through 20.)

1—Forward CG displacement 3.8 inches.
2—Aft CG displacement 2.5 inches.
3—Aft CG displacement 3.8 inches.
4—Forward CG displacement 2.5 inches.

6993. A loaded helicopter weighs 18,000 pounds and has a Mom./100 of 49,700. What is the effect if 600 pounds of the 950 pounds of fuel contained in the forward tank is consumed? (See Appendix 3, pages 14 through 20.)

1—Forward CG displacement 1.6 inches, within limits.
2—Forward CG displacement .8 inch, within limits.
3—Aft CG displacement 1.6 inches, out of limits.
4—Aft CG displacement 2.5 inches, out of limits.

6994. A loaded helicopter weighs 18,040 pounds and its CG is 276.4 inches aft of datum. What is the effect of shifting 130 pounds of baggage from the baggage pod to the forward bin? (See Appendix 3, pages 14 through 20.)

1—Aft CG displacement 1.6 inches, out of limits.
2—Aft CG displacement .8 inch, out of limits.
3—Forward CG displacement 1.4 inches, within limits.
4—Forward CG displacement .6 inch, within limits.

Table 31

ROUTE	LEG 1	LEG 2	LEG 3
No. 1	Detroit - Wayne County Airport (A) to Lansing - Capitol City Airport (B)	Lansing - Capitol City Airport (B) to Flint Bishop Airport (C)	Flint - Bishop Airport (C) to Detroit - Wayne County Airport (A)
No. 2	Flint - Bishop Airport (C) to Lansing - Capitol City Airport (B)	Lansing - Capitol City Airport (B) to Detroit - Wayne County Airport (A)	Detroit - Wayne County Airport (A) to Flint - Bishop Airport (C)

Table 32

FLIGHT PLANNING CONDITIONS	K-1	K-2	K-3	K-4
WIND	125°/13 knots	270°/12 knots	060°/12 knots	130°/14 knots
TAS	120 knots	110 knots	90 knots	90 knots
Cruise Fuel Consuption	1,050 lb./hr.	1,050 lb./hr.	65 lb./hr.	65 lb./hr.
Fuel for Ground Operations	120 lb.	120 lb.	10 lb.	10 lb.

6995. Which of the following is included in basic operating weight?

1—Crew, fuel, and drainable oil.
2—Fuel and payload.
3—Drainable fuel and oil.
4—Operating items including crew.

6996. An air carrier helicopter is scheduled for Route No. 1 in day VFR conditions. What is the total time required under Flight Planning Conditions K–1, with two 10–minute stops included? (See Tables 31 and 32, and Figure 72, page 143.)

1—1 hour, 16 minutes.
2—1 hour, 22 minutes.
3—1 hour, 36 minutes.
4—1 hour, 43 minutes.

6997. An air carrier helicopter is scheduled for Route No. 1 in day VFR conditions. What is the minimum fuel supply that must be entered on the flight release under Flight Planning Conditions K–1? (See Tables 31 and 32, and Figure 72, page 143.)

1—2,300 pounds.
2—1,800 pounds.
3—1,450 pounds.
4—1,330 pounds.

6998. An air carrier helicopter is scheduled for Route No. 2 in day VFR conditions. What is the total time required under Flight Planning Conditions K–1, with two 10–minute stops included? (See Tables 31 and 32, and Figure 72, page 143.)

1—1 hour, 36 minutes.
2—1 hour, 33 minutes.
3—1 hour, 30 minutes.
4—1 hour, 27 minutes.

6999. The procedures for the control of weight and balance for air carrier helicopters are found in

1—FAR Parts 91 and 121.
2—the Airplane Flight Manual.
3—the air carrier's operations specifications.
4—FAR Part 127.

7000. An air carrier helicopter is scheduled for Route No. 2 in day VFR conditions. What is the minimum fuel supply that must be entered on the flight release under Flight Planning Conditions K–1? (See Tables 31 and 32 and Figure 72, page 143.)

1—1,680 pounds.
2—1,800 pounds.
3—2,030 pounds.
4—2,150 pounds.

7001. An air carrier helicopter is scheduled for Route No. 1 in day VFR conditions. What is the total time required under Flight Planning Conditions K–2, with two 10–minute stops included? (See Tables 31 and 32, and Figure 72, page 143.)

1—1 hour, 37 minutes.
2—1 hour, 40 minutes.
3—1 hour, 43 minutes.
4—1 hour, 49 minutes.

7002. An air carrier helicopter is scheduled for Route No. 1 in day VFR conditions. What is the minimum fuel supply that must be entered on the flight release under Flight Planning Conditions K–2? (See Tables 31 and 32 and Figure 72, page 143.)

1—1,922 pounds.
2—1,802 pounds.
3—1,572 pounds.
4—1,452 pounds.

7003. For a FAR Part 127 VFR operation, what minimum fuel supply must be entered on the flight release under the following conditions?

Fuel required for warmup and takeoff	90 lb.
Average fuel consumption at normal cruise	10 lb./min.
Extra for anticipated traffic and intermediate stop delays	120 lb.
Stage lengths are, respectively	24, 22, and 18 min.

1—980 lb.
2—1,040 lb.
3—1,050 lb.
4—1,150 lb.

7004. An air carrier helicopter is scheduled for Route No. 2 in day VFR conditions. What is the total time required under Flight Planning Conditions K–2, with two 10–minute stops included? (See Tables 31 and 32, page 141, and Figure 72.)

1—1 hour, 49 minutes.
2—1 hour, 43 minutes.
3—1 hour, 36 minutes.
4—1 hour, 23 minutes.

7005. An air carrier helicopter is scheduled for Route No. 2 in day VFR conditions. What is the minimum fuel supply that must be entered on the flight release under Flight Planning Conditions K–2? (See Tables 31 and 32, page 141, and Figure 72.)

1—1,452 pounds.
2—1,572 pounds.
3—1,922 pounds.
4—2,062 pounds.

7006. What is the total time required for Route No. 1 under Flight Planning Conditions K–3, with two 10–minute stops included? (See Tables 31 and 32, page 141, and Figure 72.)

1—1 hour, 56 minutes.
2—1 hour, 59 minutes.
3—2 hours, 1 minute.
4—2 hours, 6 minutes.

7007. What is the minimum fuel supply required for Route No. 1 under Flight Planning Conditions K–3, including a 20–minute reserve? (See Tables 31 and 32, page 141, and Figure 72.)

1—152 pounds.
2—142 pounds.
3—120 pounds.
4—110 pounds.

7008. What is the total time required for Route No. 2 under Flight Planning Conditions K–3, with two 10–minute stops included? (See Tables 31 and 32, page 141, and Figure 72.)

1—1 hour, 55 minutes.
2—1 hour, 58 minutes.
3—2 hours, 1 minute.
4—2 hours, 4 minutes.

7009. What is the minimum fuel supply required for Route No. 2 under Flight Planning Conditions K–3, including a 20–minute reserve? (See Tables 31 and 32, page 141, and Figure 72.)

1—132 pounds.
2—135 pounds.
3—138 pounds.
4—141 pounds.

7010. What is the total time required for Route No. 1 under Flight Planning Conditions K–4, with two 10–minute stops included? (See Tables 31 and 32, page 141, and Figure 72.)

1—1 hour, 54 minutes.
2—1 hour, 57 minutes.
3—2 hours.
4—2 hours, 3 minutes.

7011. What is the minimum fuel supply required for Route No. 1 under Flight Planning Conditions K–4, including a 20–minute reserve? (See Tables 31 and 32, page 141, and Figure 72.)

1—143 pounds.
2—130 pounds.
3—121 pounds.
4—112 pounds.

7012. What is the total time required for Route No. 2 under Flight Planning Conditions K–4, with two 10–minute stops included? (See Tables 31 and 32, page 141, and Figure 72.)

1—2 hours, 6 minutes.
2—2 hours, 3 minutes.
3—2 hours.
4—1 hour, 47 minutes.

7013. What is the minimum fuel supply required for Route No. 2 under Flight Planning Conditions K–4, including a 20–minute reserve? (See Tables 31 and 32, page 141, and Figure 72.)

1—112 pounds.
2—121 pounds.
3—143 pounds.
4—151 pounds.

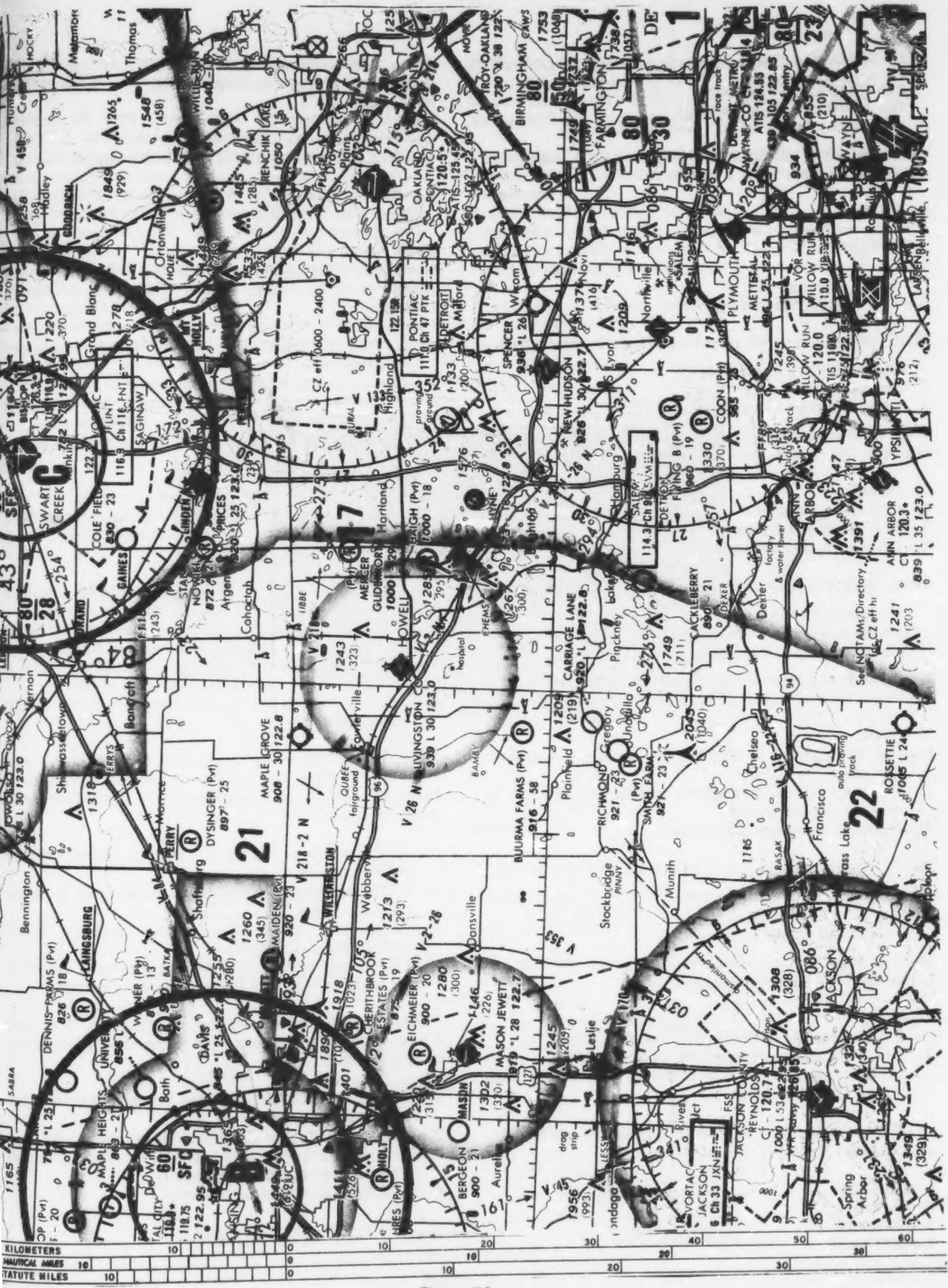

KILOMETERS
NAUTICAL MILES
STATUTE MILES
PONTIAC
OAKLAND PONTIAC
BIRMINGHAM
FARMINGTON
PLYMOUTH
WILLOW RUN
YPSILANTI
ANN ARBOR
SALEM
NEW HUDSON
SPENCER
HOWELL
LIVINGSTON CO
FLINT
SAGINAW
LINDEN
CARRIAGE LANE
MASON JEWETT
MASON
JACKSON
JACKSON COUNTY REYNOLDS
CHELSEA
DEXTER
STOCKBRIDGE
LANSING
WILLIAMSTON
DANSVILLE
WEBBERVILLE
FOWLERVILLE
PINCKNEY
BRIGHTON
HARTLAND
MILFORD
NOVI
NORTHVILLE
HOLLY
ORTONVILLE
GRAND BLANC
GAINES
BANCROFT
PERRY
LAINGSBURG
BENNINGTON
BATH
HOLT
LESLIE
ONONDAGA
MUNITH
FRANCISCO
SPRING ARBOR
ROSSETTIE
SEE NOTAMs/Directory CZ eff hr

Figure 72

7014. Within the past 6 months you have accomplished:

one approach in a helicopter
two approaches in an airplane
two approaches in an approved simulator

What additional approaches, if any, must you perform to maintain IFR currency in a helicopter?

1—None.
2—One approach in an airplane, helicopter, or approved simulator.
3—Two approaches in a helicopter and one approach in an approved simulator.
4—Five approaches in a helicopter.

7015. Within the past 6 months you have accomplished:

two approaches in a helicopter
two approaches in an airplane
two approaches in a simulator

What additional approaches, if any, must you perform to maintain IFR currency in a helicopter?

1—None.
2—One in a helicopter.
3—One in either a helicopter or an airplane.
4—One in a helicopter and one in an airplane.

7016. Within the past 6 months you have accomplished:

two approaches in a helicopter
two approaches in an airplane
one approach in an approved simulator

What additional approaches, if any, must you perform to maintain IFR currency in a helicopter?

1—None.
2—One approach in an airplane, helicopter, or approved simulator.
3—One approach in a helicopter and two approaches in an approved simulator.
4—Four approaches in a helicopter.

7017. Within the past 6 months you have accomplished:

1 hour actual IFR and 1 hour simulated IFR in a helicopter
2 hours actual IFR in an airplane
1 hour in an approved simulator

What additional instrument time, if any, must you acquire to maintain IFR currency in a helicopter?

1—None.
2—1 hour actual or simulated IFR in a helicopter.
3—1 hour actual or simulated IFR in an aircraft.
4—1 hour actual or simulated IFR in a helicopter and 2 hours in a simulator.

7018. The instrument approach criteria for helicopters are based on airspeeds not exceeding

1—70 knots.
2—80 knots.
3—90 knots.
4—100 knots.

7019. What minimum conditions are necessary for the instrument approaches required for IFR currency in a helicopter?

1—Three must be made in a helicopter.
2—Three must be made in a rotorcraft category.
3—Three must be made in an aircraft.
4—All may be made in an airplane, helicopter, or approved simulator.

7020. What additional flight hours, within the past 6 months, will enable you to maintain IFR currency in a helicopter if you already have 3 hours in an instrument simulator?

1—3 hours of simulated instrument time in an airplane or a helicopter.
2—3 hours of simulated instrument time in a helicopter.
3—3 hours of actual or simulated instrument time in an aircraft of the rotorcraft category, gyroplane class.
4—3 hours of simulated instrument time in any category aircraft.

7021. Unless otherwise prescribed, what is the rule regarding altitude and course to be maintained by a helicopter during an IFR off-airways flight over mountainous terrain?

1—1,000 feet above the highest obstacle within a horizontal distance of 5 nautical miles of course.
2—1,000 feet above the highest obstacle within a horizontal distance of 5 statute miles of course.
3—2,500 feet above the highest obstacle within a horizontal distance of 3 nautical miles of course.
4—2,000 feet above the highest obstacle within 5 statute miles of course.

7022. Unless otherwise prescribed, what is the rule regarding altitude and course to be maintained by a helicopter during an off-airways IFR flight over non-mountainous terrain?

1—1,000 feet above the highest obstacle within 5 statute miles of course.
2—2,000 feet above the highest obstacle within 5 statute miles of course.
3—1,000 feet above the highest obstacle within 3 nautical miles of course.
4—1,500 feet above the highest obstacle within a horizontal distance of 3 statute miles of course.

7023. What minimum instrument time in the past 6 months meets the requirement to maintain IFR currency in a helicopter?

1—3 hours of actual or simulated instrument time in the same type helicopter.
2—3 hours of actual or simulated IFR in a helicopter.
3—3 hours of actual or simulated IFR in a helicopter and 3 hours in an approved simulator.
4—6 hours in an approved simulator.

7024. Which of the following is a transponder requirement for helicopter operations?

1—Helicopters with a certificated gross weight of more than 12,500 pounds that are engaged in commercial operations are required to be equipped with operable ATC transponders.
2—Under the terms of a letter of agreement, helicopters may be operated at or below 1,000 feet AGL within Group I and Group II TCA's without an operable ATC transponder.
3—Operable ATC transponders are required when operating helicopters within control zones at night under special VFR.
4—Helicopters are required to be equipped with operable ATC transponders during all commercial operations above 3,000 feet AGL.

7025. You are operating from a heliport located outside of controlled airspace. If existing weather conditions are below those for VFR flight, an IFR flight plan must be filed and an ATC clearance received, prior to

1—takeoff if weather conditions are below IFR minima.
2—entering controlled airspace.
3—takeoff.
4—entering IFR weather conditions.

7026. The procedure turn area for the COPTER VOR 241 approach is (See Figure 73.)

1—10 nautical miles.
2—10 statute miles.
3—5 nautical miles.
4—5 statute miles.

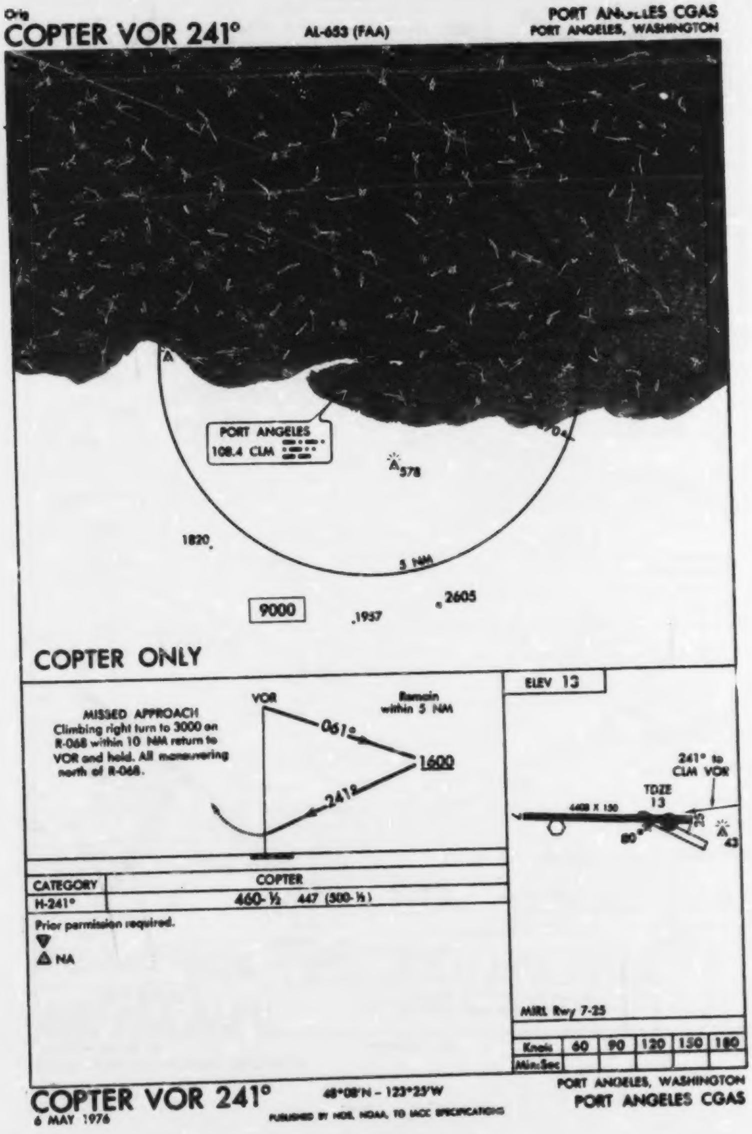
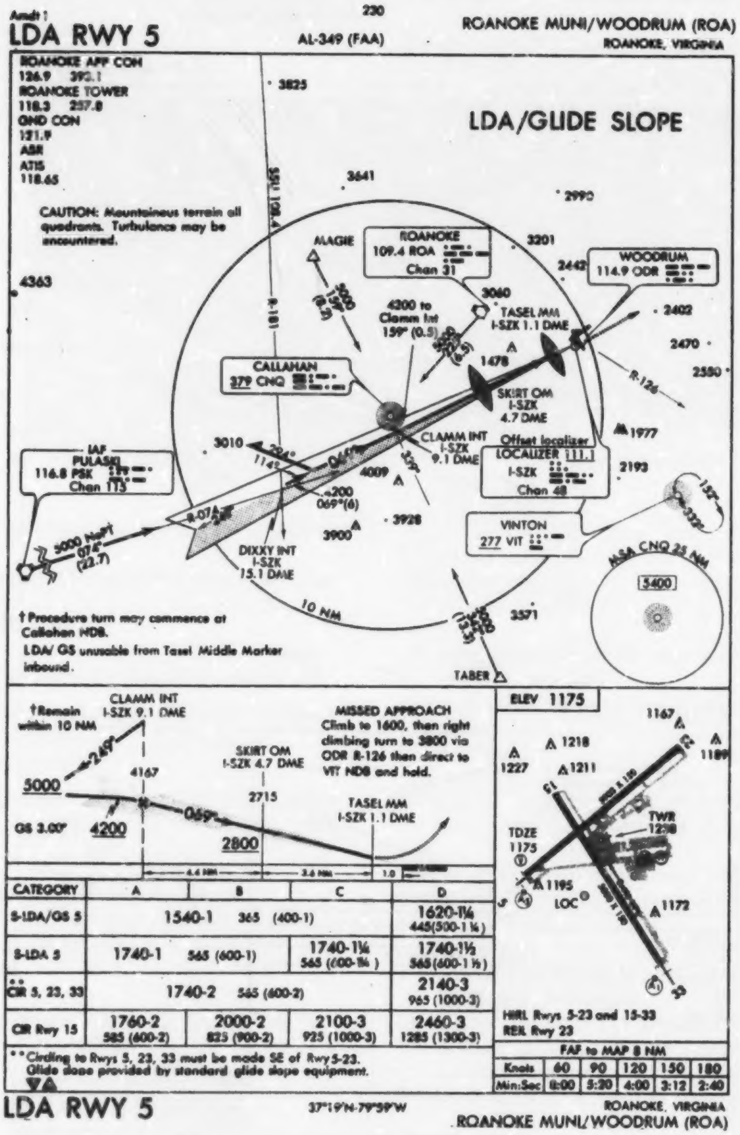

Orig
COPTER VOR 241°
AL-653 (FAA)
PORT ANGELES CGAS
PORT ANGELES, WASHINGTON
PORT ANGELES
108.4 CLM
578
1820
5 NM
9000
1957
2605
COPTER ONLY
MISSED APPROACH
Climbing right turn to 3000 on R-068 within 10 NM return to VOR and hold. All maneuvering north of R-068.
VOR
Remain within 5 NM
061°
1600
241°
ELEV 13
241° to CLM VOR
TDZE 13
4400 X 150
80°
43
CATEGORY
COPTER
H-241°
460-½ 447 (500-½)
Prior permission required.
NA
MIRL Rwy 7-25
Knots 60 90 120 150 180
Min:Sec
COPTER VOR 241°
6 MAY 1976
48°08'N - 123°23'W
PUBLISHED BY NOS, NOAA, TO IACC SPECIFICATIONS
PORT ANGELES, WASHINGTON
PORT ANGELES CGAS

Figure 73

7027. Between CLAMM Intersection and SKIRT OM, a pilot of a helicopter is advised that the visibility is 3/4 mile. If, upon arrival at the MDA and expiration of required time, the runway is in sight, what action is appropriate? (See Figure 74.)

1—A missed approach must be initated because the landing minimum is 1 mile.
2—A landing may be made because the landing visibility minimum for helicopters is 1/2 mile.
3—The pilot may descend below the MDA but may not land since the visibility is below helicopter minima.
4—The pilot may not land because the visibility is less than one-half the circling minima.


Amdt 1
LDA RWY 5
230
AL-349 (FAA)
ROANOKE MUNI/WOODRUM (ROA)
ROANOKE, VIRGINIA
ROANOKE APP CON
126.9 393.1
ROANOKE TOWER
118.3 257.8
GND CON
121.9
ASR
ATIS
118.65
LDA/GLIDE SLOPE
3825
3641
2990
4363
MAGIE
ROANOKE
109.4 ROA
Chan 31
3201
2442
WOODRUM
114.9 ODR
3060
4200 to
Clamm Int
159° (0.5)
TASEL MM
I-SZK 1.1 DME
2402
2470
2550
1478
CALLAHAN
379 CNQ
SKIRT OM
I-SZK
4.7 DME
R-126
1977
CLAMM INT
I-SZK
9.1 DME
Offset localizer
LOCALIZER 111.1
I-SZK
Chan 48
2193
3010
IAF
PULASKI
116.8 PSK
Chan 115
4009
069°(6)
3928
3900
VINTON
277 VIT
DIXXY INT
I-SZK
15.1 DME
5000 NoPT
074°
(22.7)
MSA CNQ 25 NM
5400
10 NM
3571
TABER
CLAMM INT
I-SZK 9.1 DME
†Remain
within 10 NM
249°
5000
4167
4200
GS 3.00°
069°
SKIRT OM
I-SZK 4.7 DME
2715
2800
TASEL MM
I-SZK 1.1 DME
4.4 NM
3.6 NM
1.0
ELEV 1175
1167
1189
1218
1227
1211
TWR
1238
TDZE
1175
1195
LOC
1172
5
23
15
33

CAUTION: Mountainous terrain all quadrants. Turbulence may be encountered.

† Procedure turn may commence at Callahan NDB.

LDA/ GS unusable from Tasel Middle Marker inbound.

MISSED APPROACH
Climb to 1600, then right climbing turn to 3800 via ODR R-126 then direct to VIT NDB and hold.

CATEGORY	A	B	C	D
S-LDA/GS 5	1540-1 365 (400-1)			1620-1¼ 445(500-1¼)
S-LDA 5	1740-1 565 (600-1)		1740-1¼ 565 (600-1¼)	1740-1½ 565(600-1½)
•• CIR 5, 23, 33	1740-2 565 (600-2)			2140-3 965 (1000-3)
CIR Rwy 15	1760-2 585 (600-2)	2000-2 825 (900-2)	2100-3 925 (1000-3)	2460-3 1285 (1300-3)

** Circling to Rwys 5, 23, 33 must be made SE of Rwy 5-23.
Glide slope provided by standard glide slope equipment.

HIRL Rwys 5-23 and 15-33
REIL Rwy 23

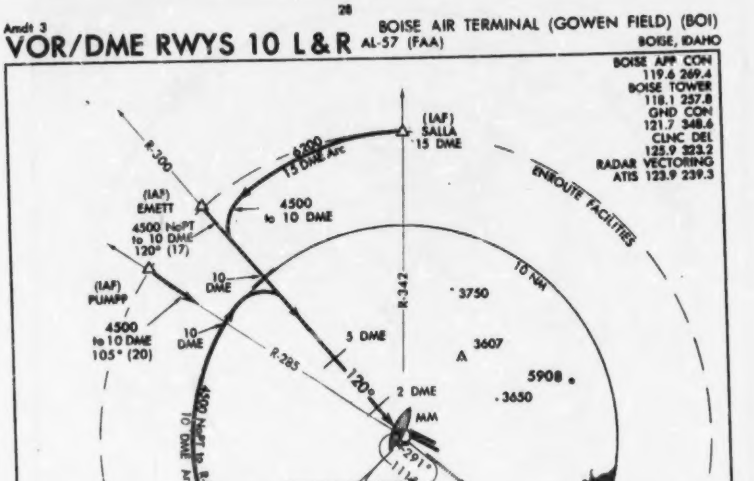
FAF to MAP 8 NM					
Knots	60	90	120	150	180
Min:Sec	8:00	5:20	4:00	3:12	2:40

LDA RWY 5 37°19'N-79°59'W
ROANOKE, VIRGINIA
ROANOKE MUNI/WOODRUM (ROA)

Figure 74

7028. What is the MDA and landing minimum for a helicopter with a DME and one VOR receiver, if cleared for a straight–in approach to Rwy 10R at Boise Air Terminal? (See Figure 75.)

1—3180 and 1 mile.
2—400 and 1/2 mile.
3—349 and RVR 24.
4—3180 and RVR 12.



28

Amdt 3

VOR/DME RWYS 10 L & R AL-57 (FAA) BOISE AIR TERMINAL (GOWEN FIELD) (BOI) BOISE, IDAHO

BOISE APP CON
119.6 269.4
BOISE TOWER
118.1 257.8
GND CON
121.7 348.6
CLNC DEL
125.9 323.2
RADAR VECTORING
ATIS 123.9 239.3
(IAF) SALLA 15 DME
6200 15 DME Arc
R-300
(IAF) EMETT
4500 NoPT to 10 DME 120° (17)
4500 to 10 DME
(IAF) PUMPP
4500 to 10 DME 105° (20)
10 DME
10 DME
R-342
ENROUTE FACILITIES
10 NM
3750
5 DME
3607
5908
3650
R-285
120°
2 DME
MM
291°
111°
4500 NoPT to R-300 10 DME Arc
BOISE 113.3 BOI Chan 80
R-111
R-212
(IAF)
MSA BOI 25 NM
150°
9400
7200
300°
10 DME
4500
5 DME
120°
Procedure Turn NA
3600
2 DME 0.5 DME
VORTAC
3220
ELEV 2858
TDZE 2839
TWR 2899
2908
TDZ 28
120°
2890
2930
2897
HIRL Rwys 10L-28R and 10R-28L

CAUTION: Trees 2450 and vehicles 1830 from threshold penetrate the approach light plane by 40 and 11 feet respectively.

MISSED APPROACH
Climb E-bound to 5500 on R-111 BOI VORTAC within 17 NM, then climbing right turn to 6000 direct BOI VORTAC and hold.

CATEGORY	A	B	C	D	E
S-10L	3180-1 341 (400-1)				
S-10R	3180/24 349 (400-½)			3180/50 349 (400-1)	
CIRCLING †	3240-1 382 (400-1)	3320-1 462 (500-1)	3320-1½ 462 (500-1½)	3420-2 562 (600-2)	3620-2 762 (800-2)

Inoperative table does not apply to HIRL Rwy 10L and 10R.
†Circling not authorized north of Rwy 10L/28R.

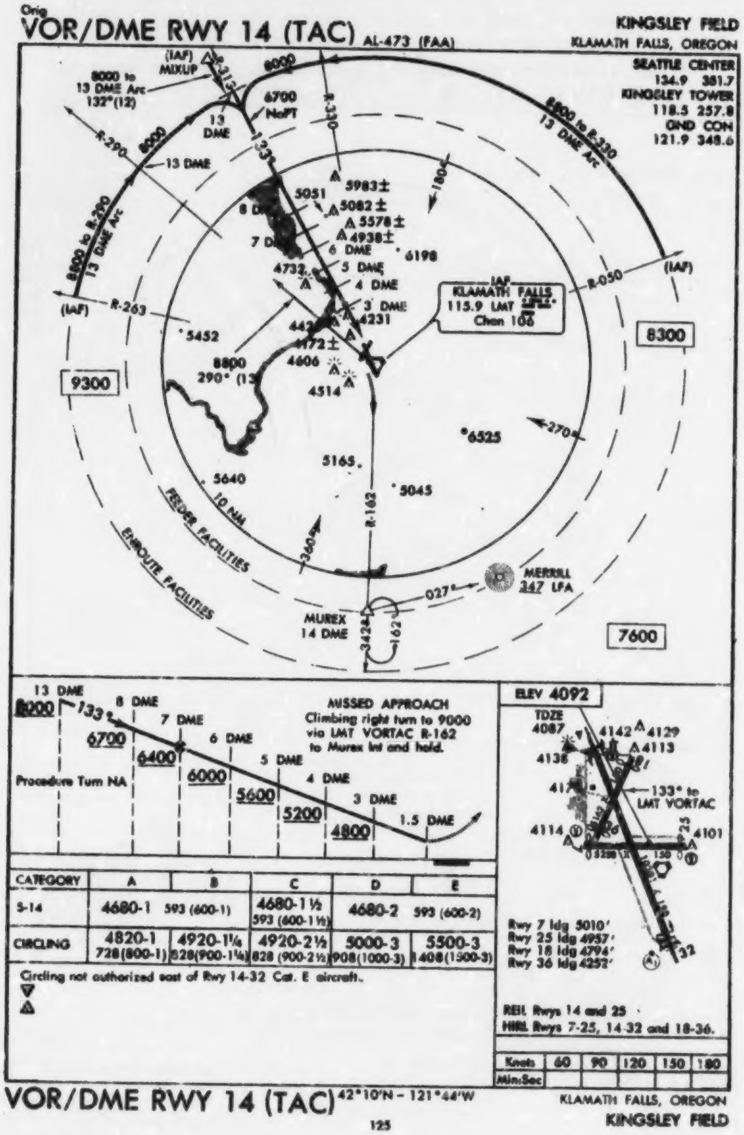
Knots	60	90	120	150	180
Min:Sec					

VOR/DME RWYS 10 L & R 43°34'N-116°14'W BOISE, IDAHO BOISE AIR TERMINAL (GOWEN FIELD) (BOI)

Figure 75

7029. What is the minimum visibility for a helicopter landing when making the VOR/DME RWY 14 approach? (See Figure 76.)

1—1/4 mile.
2—1/2 mile.
3—3/4 mile.
4—1 mile.


Orig
VOR/DME RWY 14 (TAC) AL-473 (FAA)
KINGSLEY FIELD
KLAMATH FALLS, OREGON
SEATTLE CENTER
134.9 351.7
KINGSLEY TOWER
118.5 257.8
GND CON
121.9 348.6
(IAF) MIXUP
8000 to 13 DME Arc 132° (12)
6700 NoPT
13 DME
R-330
R-290
8000
8800 to R-330 13 DME Arc
8800 to R-290 13 DME Arc
R-263
(IAF)
R-050
(IAF)
9300
8300
7600
KLAMATH FALLS
115.9 LMT
Chan 106
MUREX 14 DME
MERRILL 347 LFA
10 NM
FEEDER FACILITIES
ENROUTE FACILITIES
R-162
MISSED APPROACH
Climbing right turn to 9000 via LMT VORTAC R-162 to Murex Int and hold.
Procedure Turn NA
ELEV 4092
TDZE 4087
133° to LMT VORTAC
Rwy 7 ldg 5010'
Rwy 25 ldg 4957'
Rwy 18 ldg 4794'
Rwy 36 ldg 4252'
REIL Rwys 14 and 25
HIRL Rwys 7-25, 14-32 and 18-36.
Knots 60 90 120 150 180
Min:Sec
VOR/DME RWY 14 (TAC) 42°10'N – 121°44'W
125
KLAMATH FALLS, OREGON
KINGSLEY FIELD

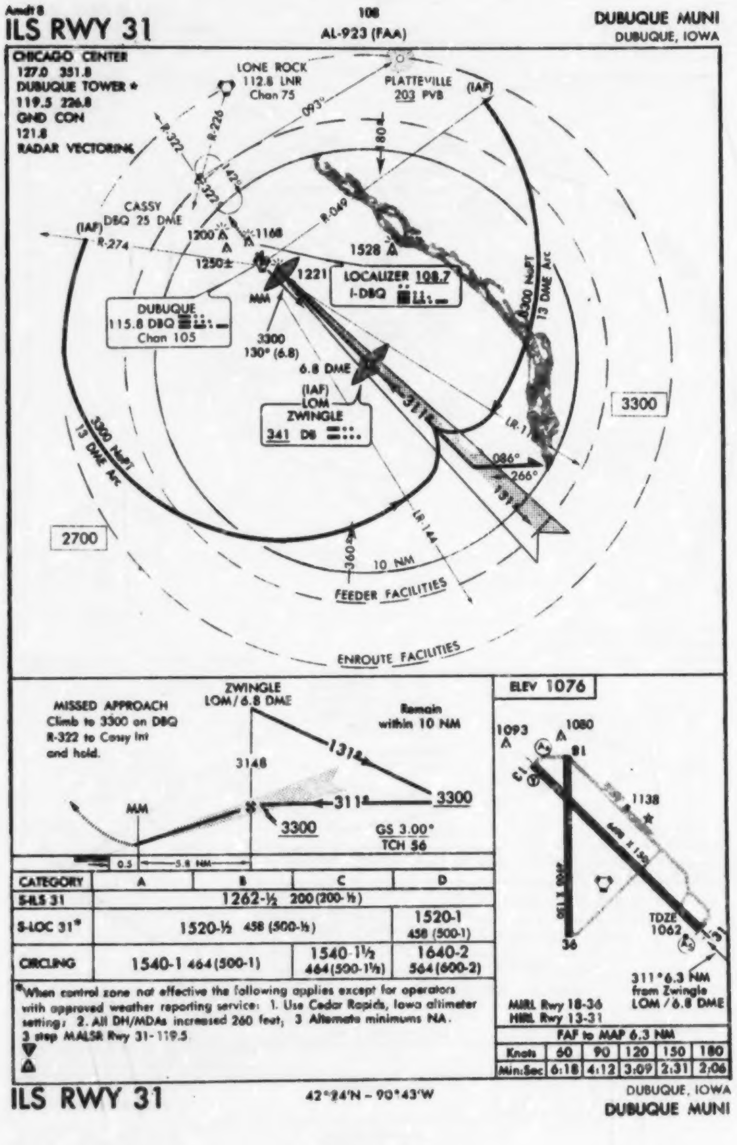
CATEGORY	A	B	C	D	E
S-14	4680-1 593 (600-1)		4680-1½ 593 (600-1½)	4680-2 593 (600-2)	
CIRCLING	4820-1 728 (800-1)	4920-1¼ 828 (900-1¼)	4920-2½ 828 (900-2½)	5000-3 908 (1000-3)	5500-3 1408 (1500-3)

Circling not authorized east of Rwy 14-32 Cat. E aircraft.

Figure 76

7030. What are the DH and landing minima for a helicopter when making the ILS RWY 31 approach at Dubuque Municipal? (See Figure 77.)

1—DH 1522; visibility 1/4 mile.
2—DH 1262; visibility 1/2 mile.
3—DH 1262; visibility 1/4 mile.
4—DH 1540; visibility 1/2 mile.


Amdt 8
ILS RWY 31
108
AL-923 (FAA)
DUBUQUE MUNI
DUBUQUE, IOWA

CHICAGO CENTER
127.0 351.8
DUBUQUE TOWER ✱
119.5 226.8
GND CON
121.8
RADAR VECTORING

MISSED APPROACH
Climb to 3300 on DBQ R-322 to Cassy Int and hold.

CATEGORY	A	B	C	D
S-ILS 31	1262-½ 200 (200-½)			
S-LOC 31*	1520-½ 458 (500-½)			1520-1 458 (500-1)
CIRCLING	1540-1 464 (500-1)		1540-1½ 464 (500-1½)	1640-2 564 (600-2)

*When control zone not effective the following applies except for operators with approved weather reporting service: 1. Use Cedar Rapids, Iowa altimeter setting; 2. All DH/MDAs increased 260 feet; 3 Alternate minimums NA.
3 step MALSR Rwy 31-119.5

ELEV 1076

MIRL Rwy 18-36
HIRL Rwy 13-31

311° 6.3 NM from Zwingle LOM / 6.8 DME

FAF to MAP 6.3 NM					
Knots	60	90	120	150	180
Min:Sec	6:18	4:12	3:09	2:31	2:06

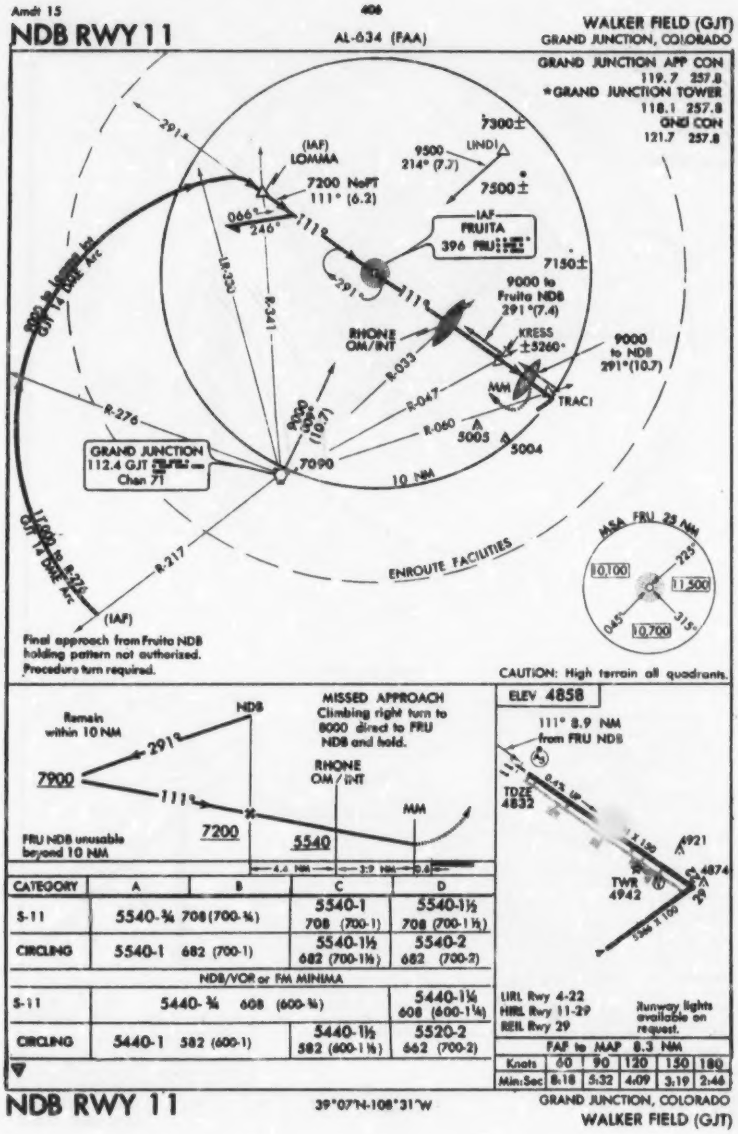
ILS RWY 31
42°24'N - 90°43'W
DUBUQUE, IOWA
DUBUQUE MUNI

LONE ROCK
112.8 LNR
Chan 75
PLATTEVILLE
203 PVB
(IAF)
093°
180
R-322
R-226
142°
322°
CASSY
DBQ 25 DME
(IAF)
R-274
1200
1168
1250±
R-049
1528
1221
LOCALIZER 108.7
I-DBQ
MM
DUBUQUE
115.8 DBQ
Chan 105
3300
130° (6.8)
6.8 DME
(IAF)
LOM
ZWINGLE
341 DB
311°
3300 NoPT
13 DME Arc
3300
LR-144
LR-11
086°
266°
131°
2700
360°
10 NM
FEEDER FACILITIES
ENROUTE FACILITIES
ZWINGLE
LOM/6.8 DME
Remain within 10 NM
131°
3148
311°
3300
MM
3300
GS 3.00°
TCH 56
0.5
5.8 NM
1093
1080
1138
13
31
18
36
TDZE
1062

Figure 77

7031. What is the straight-in MDA and landing minimum for a helicopter at Walker Field if RHONE OM/INT is identified on final approach? (See Figure 78.)

1—5440 and 3/8 mile.
2—5440 and 3/4 mile.
3—5232 and 3/4 mile.
4—5136 and 3/8 mile.


Amdt 15
406
NDB RWY 11
AL-634 (FAA)
WALKER FIELD (GJT)
GRAND JUNCTION, COLORADO
GRAND JUNCTION APP CON
119.7 257.8
*GRAND JUNCTION TOWER
118.1 257.8
GND CON
121.7 257.8
291°
(IAF)
LOMMA
7200 NoPT
111° (6.2)
066°
246°
111°
9500
214° (7.7)
LINDI
7300±
7500±
IAF
FRUITA
396 FRU
7150±
291°
9000 to
Fruita NDB
291°(7.4)
RHONE
OM/INT
KRESS
±5260
9000
to NDB
291°(10.7)
MM
TRACI
LR-330
R-341
R-033
R-047
R-060
R-276
R-217
9000 to Lomma Int
GJT 14 DME Arc
9000
290°
(10.7)
5005
5004
7090
10 NM
GRAND JUNCTION
112.4 GJT
Chan 71
ENROUTE FACILITIES
17000 to R-276
GJT 14 DME Arc
(IAF)
MSA FRU 25 NM
10,100
225°
11,500
045°
315°
10,700
Remain within 10 NM
291°
NDB
7900
111°
7200
RHONE
OM/INT
MM
5540
FRU NDB unusable beyond 10 NM
4.4 NM
3.9 NM
0.6
ELEV 4858
111° 8.9 NM
from FRU NDB
TDZE
4832
0.4% UP
X 150
4921
4874
TWR
4942
5366 X 100
29
39°07'N-108°31'W

Final approach from Fruita NDB holding pattern not authorized. Procedure turn required.

CAUTION: High terrain all quadrants.

MISSED APPROACH
Climbing right turn to 8000 direct to FRU NDB and hold.

CATEGORY	A	B	C	D
S-11	5540-¾ 708 (700-¾)		5540-1 708 (700-1)	5540-1½ 708 (700-1½)
CIRCLING	5540-1 682 (700-1)		5540-1½ 682 (700-1½)	5540-2 682 (700-2)
NDB/VOR or FM MINIMA				
S-11	5440-⅜ 608 (600-⅜)			5440-1¼ 608 (600-1¼)
CIRCLING	5440-1 582 (600-1)		5440-1½ 582 (600-1½)	5520-2 662 (700-2)

LIRL Rwy 4-22
HIRL Rwy 11-29
REIL Rwy 29

Runway lights available on request.

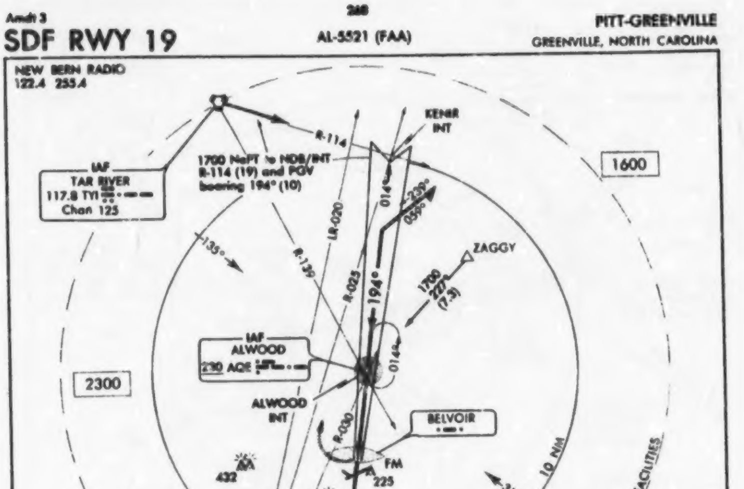
FAF to MAP 8.3 NM					
Knots	60	90	120	150	180
Min:Sec	8:18	5:32	4:09	3:19	2:46

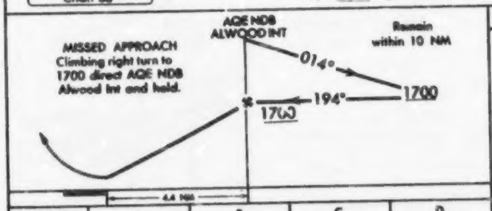
NDB RWY 11
GRAND JUNCTION, COLORADO
WALKER FIELD (GJT)

Figure 78

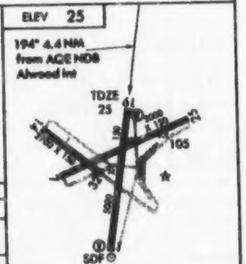
7032. What are the helicopter MDA and visibility minima for the straight-in SDF RWY 19 procedure at Pitt-Greenville Airport when Seymour Johnson AFB altimeter setting is used? (See Figure 79.)

1—680 and 1 mile.
2—680 and 1/2 mile.
3—540 and 1 mile.
4—540 and 1/2 mile.


Amdt 3
SDF RWY 19
268
AL-5521 (FAA)
PITT-GREENVILLE
GREENVILLE, NORTH CAROLINA
NEW BERN RADIO
122.4 255.4
R-114
KENIR INT
1700 NoPT to NDB/INT R-114 (19) and PGV bearing 194° (10)
IAF
TAR RIVER
117.8 TYI
Chan 125
1600
135°
R-130
LR-020
R-025
014°
229°
050°
ZAGGY
1700 227° (7.5)
194°
014°
IAF
ALWOOD
230 AQE
2300
ALWOOD INT
BELVOIR
R-030
FM
225
432
364
240±
10 NM
315°
ENROUTE FACILITIES
045°
SDF
108.9 PGV
948
1900 030° (22.3)
3100
KINSTON
109.6 ISO
Chan 33


AQE NDB
ALWOOD INT
Remain within 10 NM
014°
1700
194°
1700
4.4 NM

MISSED APPROACH
Climbing right turn to 1700 direct AQE NDB Alwood Int and hold.


ELEV 25
194° 4.4 NM from AQE NDB Alwood Int
TDZE 25
105
SDF

CATEGORY	A	B	C	D
S-19	400-1 375 (400-1)			400-1¼ 375 (400-1¼)
CIRCLING	540-1 515 (600-1)		540-1½ 515 (600-1½)	680-2¼ 655 (700-2¼)

CAUTION: Low power fan marker located at threshold Rwy 19 not to be used as the missed approach point.
When local altimeter setting not available use Seymour Johnson AFB, NC altimeter setting and increase all MDA s 140 feet.
▽
△NA

REIL Rwy 19
MIRL Rwys 1-19 and 7-25

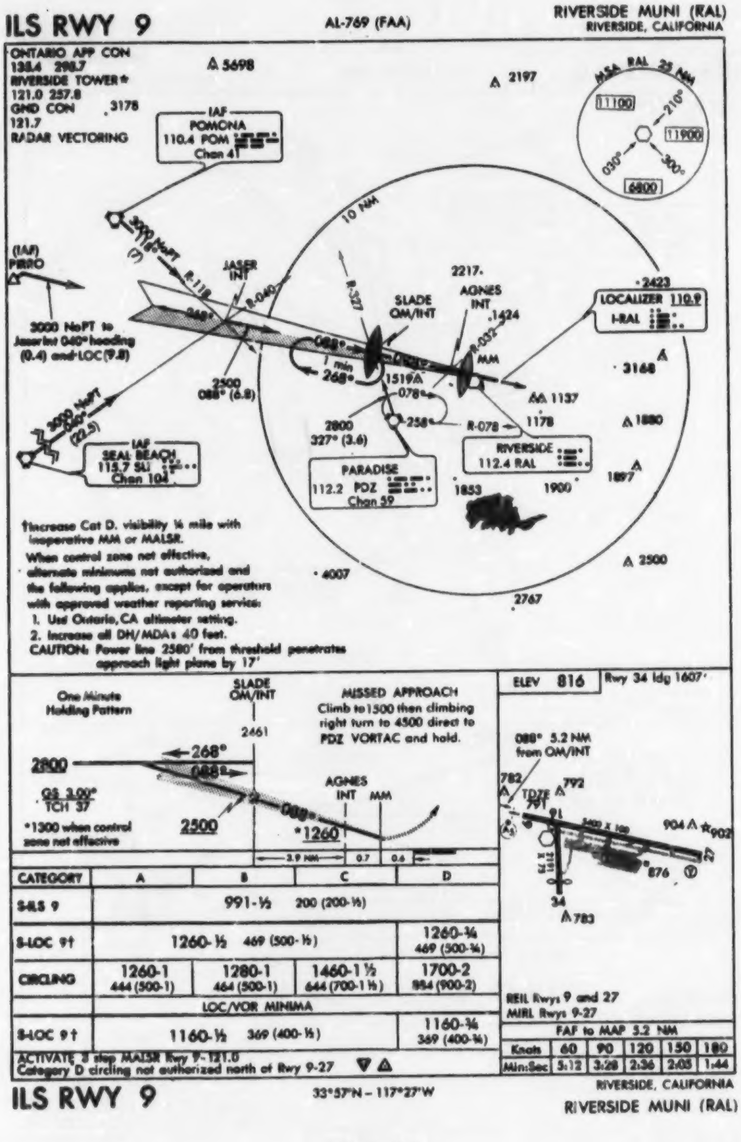
FAF to MAP 4.4 NM					
Knots	60	90	120	150	180
Min:Sec	4:24	2:56	2:12	1:46	1:28

SDF RWY 19 35°38'N - 77°23'W GREENVILLE, NORTH CAROLINA
PITT-GREENVILLE

Figure 79

7033. If the control zone is not effective, what is the LOC/VOR minima for a helicopter if cleared for the S-LOC 9 approach at Riverside Municipal? (See Figure 80.)

1—1160 and 1/2 mile.
2—1200 and 1/4 mile.
3—991 and RVR 24.
4—1300 and 1/4 mile.


ILS RWY 9
AL-769 (FAA)
RIVERSIDE MUNI (RAL)
RIVERSIDE, CALIFORNIA
ONTARIO APP CON
133.4 290.7
RIVERSIDE TOWER★
121.0 257.8
GND CON
121.7
RADAR VECTORING
5698
3178
2197
MSA RAL 25 NM
11100
11900
6800
210°
030°
300°
IAF
POMONA
110.4 POM
Chan 41
(IAF)
PIRRO
3000 NoPT to
Jaser Int 040° heading
(0.4) and LOC (9.8)
JASER
INT
R-118
R-040
10 NM
R-327
2217
SLADE
OM/INT
AGNES
INT
R-032
1424
MM
2423
LOCALIZER 110.9
I-RAL
3168
1137
1178
1880
R-078
RIVERSIDE
112.4 RAL
1897
1900
1853
2500
2767
4007
088°
268°
1 min
1519
078°
258°
2500
088° (6.8)
2800
327° (3.6)
PARADISE
112.2 PDZ
Chan 59
3000 NoPT
088°
(22.5)
IAF
SEAL BEACH
115.7 SLI
Chan 104
One Minute
Holding Pattern
2461
268°
088°
2800
GS 3.00°
TCH 37
2500
*1260
3.9 NM
0.7
0.6
ELEV 816
Rwy 34 ldg 1607'
088° 5.2 NM
from OM/INT
782
TDZE
791
792
904
902
876
783
34
27
9
33°57'N – 117°27'W

MISSED APPROACH
Climb to 1500 then climbing right turn to 4500 direct to PDZ VORTAC and hold.

†Increase Cat D. visibility ¼ mile with inoperative MM or MALSR.

When control zone not effective, alternate minimums not authorized and the following applies, except for operators with approved weather reporting service:
1. Use Ontario, CA altimeter setting.
2. Increase all DH/MDAs 40 feet.

CAUTION: Power line 2580' from threshold penetrates approach light plane by 17'

*1300 when control zone not effective

CATEGORY	A	B	C	D
S-ILS 9	991-½ 200 (200-½)			
S-LOC 9†	1260-½ 469 (500-½)			1260-¾ 469 (500-¾)
CIRCLING	1260-1 444 (500-1)	1280-1 464 (500-1)	1460-1½ 644 (700-1½)	1700-2 884 (900-2)
	LOC/VOR MINIMA			
S-LOC 9†	1160-½ 369 (400-½)			1160-¾ 369 (400-¾)

ACTIVATE 3 step MALSR Rwy 9-121.0
Category D circling not authorized north of Rwy 9-27

REIL Rwys 9 and 27
MIRL Rwys 9-27

FAF to MAP 5.2 NM					
Knots	60	90	120	150	180
Min:Sec	5:12	3:28	2:36	2:05	1:44

Figure 80

7034. What is the helicopter MDA for a straight-in VOR RWY 36 approach at Carbon County Airport (VOR only)? (See Figure 81.)

1—250.
2—6090.
3—500.
4—6340.

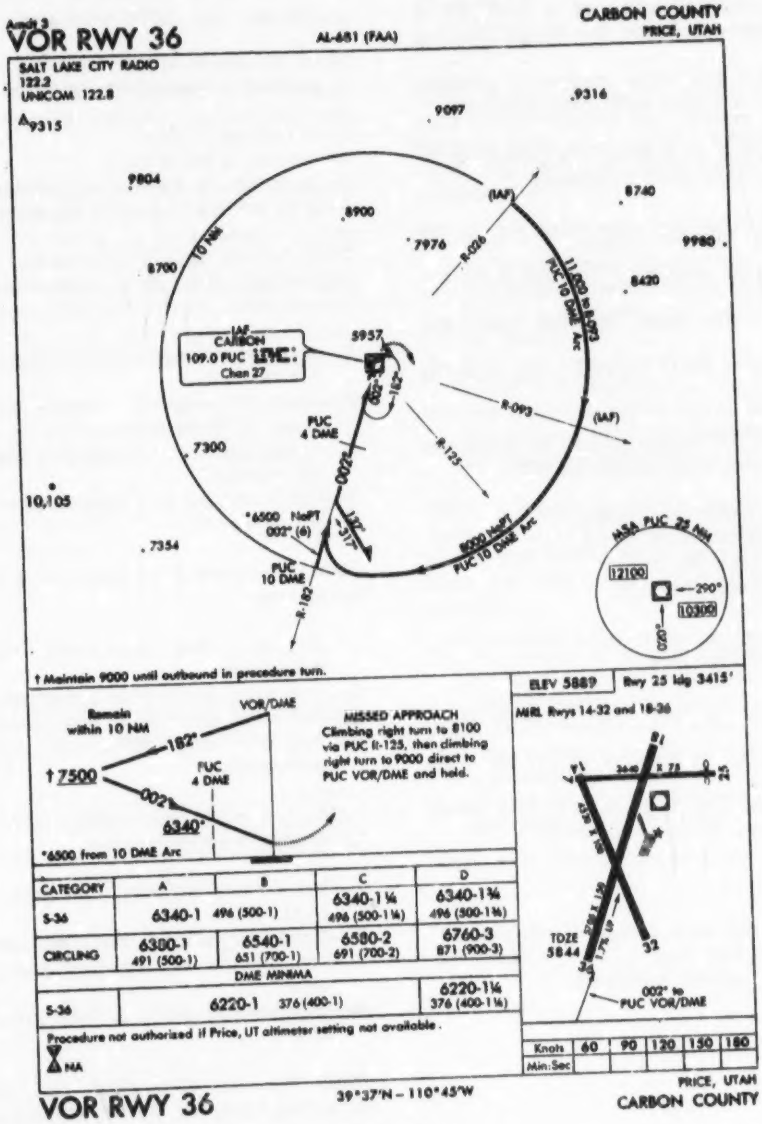

Amdt 3
VOR RWY 36
AL-681 (FAA)
CARBON COUNTY
PRICE, UTAH
SALT LAKE CITY RADIO
122.2
UNICOM 122.8
9315
9097
9316
9804
8900
8740
7976
9980
8700
8420
10 NM
(IAF)
R-026
11,000 to R-093
PUC 10 DME Arc
IAF
CARBON
109.0 PUC
Chan 27
5957
182°
002°
R-093
(IAF)
PUC
4 DME
R-125
7300
10,105
*6500 NoPT
002° (6)
182°
317°
9000 NoPT
PUC 10 DME Arc
7354
PUC
10 DME
R-182
MSA PUC 25 NM
12100
290°
10300
020°
† Maintain 9000 until outbound in procedure turn.
Remain within 10 NM
VOR/DME
182°
† 7500
PUC
4 DME
002°
6340*
*6500 from 10 DME Arc
MISSED APPROACH
Climbing right turn to 8100 via PUC R-125, then climbing right turn to 9000 direct to PUC VOR/DME and hold.
ELEV 5889
Rwy 25 ldg 3415'
MIRL Rwys 14-32 and 18-36
18
14
3640 X 75
7
25
TDZE 5844
36
32
1.7% UP
002° to PUC VOR/DME
CATEGORY
A
B
C
D
S-36
6340-1 496 (500-1)
6340-1¼ 496 (500-1¼)
6340-1¾ 496 (500-1¾)
CIRCLING
6380-1 491 (500-1)
6540-1 651 (700-1)
6580-2 691 (700-2)
6760-3 871 (900-3)
DME MINIMA
S-36
6220-1 376 (400-1)
6220-1¼ 376 (400-1¼)
Procedure not authorized if Price, UT altimeter setting not available.
NA
Knots
60
90
120
150
180
Min:Sec
VOR RWY 36
39°37'N – 110°45'W
PRICE, UTAH
CARBON COUNTY

Figure 81

7035. Except during takeoff and landing, or otherwise authorized by the Administrator, at what altitude may a helicopter be operated on an IFR clearance?

1—In a designated mountainous area, below 2,000 feet above the highest obstacle and within 5 nautical miles of that obstacle.
2—Below 500 feet above the highest obstacle, and within 5 statute miles from the course to be flown.
3—When within 22 nautical miles of a VOR for a particular route segment, below the MOCA, but not below the MEA.
4—Not lower than the applicable minimum altitudes listed in the air carrier's operations specifications.

7036. A pilot in command of a gyroplane (including air carrier operations) who declares an emergency

1—is exempt from all rules and clearances during the emergency.
2—may deviate from the clearance but not from the rules.
3—may deviate from the rules but not from the clearance.
4—may deviate from the rules to the extent necessary to meet the emergency.

7037. What are the basic VFR weather minima for gyroplanes operating within control zones below 10,000 feet MSL?

1—1–mile visibility and 1,000–foot ceiling.
2—3–mile visibility and 1,000–foot ceiling.
3—1–mile visibility and clear of clouds.
4—3–mile visibility and clear of clouds.

7038. A gyroplane may not be operated in a control zone under special VFR unless it remains

1—clear of clouds and the flight visibility is at least 1 statute mile.
2—500 feet below clouds and the ground visibility is at least 1 nautical mile.
3—500 feet below clouds and it is operated at a speed that will enable the pilot to avoid a collision.
4—clear of clouds and the ground visibility is at least 2 statute miles.

7039. A gyroplane may not be operated in uncontrolled airspace at an altitude of less than 1,200 feet above the surface, unless the flight visibility is at least

1—4 nautical miles.
2—3 statute miles.
3—2 nautical miles.
4—1 statute mile.

7040. What action should you take if ground resonance occurs during rotor spin–up?

1—Initiate an immediate jump takeoff.
2—Close the throttle and slowly disengage the spin–up mechanism.
3—Taxi to a smoother area.
4—Initiate a normal takeoff immediately.

7041. Which is a recommended technique to be followed while taxiing a gyroplane?

1—Taxi on rough terrain at a higher–than–normal speed when the rotor blades are turning.
2—Hold the cyclic stick slightly aft of neutral at all times.
3—Avoid abrupt control movements while taxiing when the rotor blades are turning.
4—Hold the cyclic stick in the neutral position at all times.

7042. Airspeeds approaching V_{NE} in turbulent air should be avoided primarily because of the possibility of

1—an abrupt pitchup.
2—retreating blade stall.
3—excessive stress on the advancing blade.
4—a severe low frequency vibration.

7043. During forward cruising flight at constant airspeed and altitude, the individual rotor blades, when compared to each other, are operating at

1—unequal airspeed, equal angles of attack, and unequal lift moment.
2—constant airspeed, unequal angles of attack, and unequal lift moment.
3—unequal airspeed, unequal angles of attack, and equal lift moment.
4—constant airspeed, equal angles of attack, and equal lift moment.

7044. The main rotor blades of a fully articulated rotor system can

1—flap and drag individually, but can only feather collectively.
2—flap, drag, and feather collectively.
3—flap, drag, and feather independently of each other.
4—flap and drag collectively, but can only feather individually.

7045. The most unfavorable combination of conditions for gyroplane performance is

1—low density altitude, high gross weight, and strong wind.
2—low density altitude, low gross weight, and calm wind.
3—high density altitude, high gross weight, and strong wind.
4—high density altitude, high gross weight, and calm wind.

7046. The lift differential that exists between the advancing blade and the retreating blade is known as

1—Coriolis effect.
2—dissymmetry of lift.
3—translating tendency.
4—translational lift.

7047. Which set of conditions is most likely to result in retreating blade stall?

1—Low gross weight, high rotor RPM, and low density altitude.
2—High gross weight, low rotor RPM, and high density altitude.
3—High gross weight, high rotor RPM, and low density altitude.
4—Low gross weight, low rotor RPM, and low density altitude.

7048. The principal reason for avoiding the cross-hatched area of the Height vs. Velocity Diagram (Appendix 3, page 21) is because

1—rotor RPM may build excessively high if it is necessary to flare at such low altitudes.
2—sufficient airspeed is not available to ensure a safe landing in the event of power failure.
3—rotor RPM may decay before ground contact is made if power failure should occur.
4—turbulence near the surface can dephase the blade dampers causing geometric unbalanced conditions on the rotor system.

7049. Determine the ground run distance to lift off under the following conditions. (See Appendix 3, page 22.)

Gross weight .... 1,500 lb.
Pressure altitude .... 1,750 ft.
OAT .... 90° F

1—640 ft.
2—695 ft.
3—775 ft.
4—960 ft.

7050. Determine the total takeoff distance to clear a 50-foot obstacle under the following conditions. (See Appendix 3, page 23.)

Gross weight .... 1,500 lb.
Pressure altitude .... 3,500 ft.
OAT .... 80° F

1—500 ft.
2—2,030 ft.
3—2,330 ft.
4—2,450 ft.

7051. At what pressure altitude is the rate of climb reduced to 250 ft./min. under these conditions? (See Appendix 3, page 24.)

Gross weight .... 1,400 lb.
IAS .... 62 MPH
OAT .... 95° F

1—3,000 ft.
2—3,300 ft.
3—3,800 ft.
4—4,000 ft.

7052. What is the weight and CG condition of a gyroplane loaded according to the partially completed Weight and Balance Form on page 25 of Appendix 3? (See Loading Chart and Center of Gravity Envelope on pages 26 and 27 of Appendix 3.)

1—Both the weight and CG are within limits; the gyroplane can be flown safely.
2—The weight is within limits, but the CG is aft of the aft limit; the gyroplane can be flown safely but would be tail-heavy.
3—Both the weight and the CG are out of limits; flight should not be attempted.
4—The weight is within limits, but the CG is forward of the forward limit; the gyroplane can be safely flown but would be nose-heavy.

7053. A loaded gyroplane weighs 1,530 pounds and its Mom./1,000 is 115. What is the effect of removing 40 pounds of baggage and adding 3 gallons of fuel? (See the Loading Chart and Center of Gravity Envelope on pages 26 and 27 of Appendix 3.)

1—The center of gravity moves forward and is within limits; the weight decreases to the exact maximum takeoff weight limit.
2—Both the weight and center of gravity are within limits.
3—The center of gravity remains the same; the weight decreases but is out of limits.
4—The center of gravity moves aft; the weight decreases and remains out of limits.

APPENDIX 2

INSTRUMENT APPROACH PROCEDURES EXPLANATION OF TERMS

The United States Standard for Terminal Instrument Procedures (TERPS) is the approved criteria for formulating instrument approach procedures.

AIRCRAFT APPROACH CATEGORIES

Speeds are based on 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft shall fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the next higher category should be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, should use the approach Category B minimums when circling to land. See following category limits:

Approach Category	Speed
A.	Speed less than 91 knots.
B.	Speed 91 knots or more but less than 121 knots.
C.	Speed 121 knots or more but less than 141 knots.
D.	Speed 141 knots or more but less than 166 knots.
E.	Speed 166 knots or more.

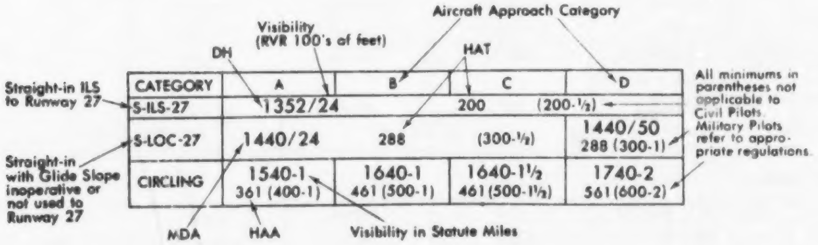
RVR/Meteorological Visibility Comparable Values

The following table shall be used for converting RVR to meteorological visibility when RVR is inoperative.

RVR (feet)	Visibility (statute miles)	RVR (feet)	Visibility (statute miles)
1600	¼	4000	¾
2000	⅜	4500	⅞
2400	½	5000	1
3200	⅝	6000	1¼

LANDING MINIMA FORMAT

In this example airport elevation is 1179, and runway touchdown zone elevation is 1152.



CATEGORY	A	B	C	D
S-ILS-27	1352/24		200	(200-½)
S-LOC-27	1440/24	288	(300-½)	1440/50 288 (300-1)
CIRCLING	1540-1 361 (400-1)	1640-1 461 (500-1)	1640-1½ 461 (500-1½)	1740-2 561 (600-2)

Aircraft Approach Category
Visibility (RVR 100's of feet)
DH
HAT
Straight-in ILS to Runway 27
Straight-in with Glide Slope inoperative or not used to Runway 27
All minimums in parentheses not applicable to Civil Pilots. Military Pilots refer to appropriate regulations.
MDA
HAA
Visibility in Statute Miles

Instrument Approach Procedures (Charts)
INOPERATIVE COMPONENTS OR VISUAL AIDS TABLE

Landing minimums published on instrument approach procedure charts are based upon full operation of all components and visual aids associated with the particular instrument approach chart being used. Higher minimums are required with inoperative components or visual aids as indicated below. If more than one component is inoperative, each minimum is raised to the highest minimum required by any single component that is inoperative. ILS glide slope inoperative minimums are published on instrument approach charts as localizer minimums. This table may be amended by notes on the approach chart. Such notes apply only to the particular approach category(ies) as stated. See legend page for description of components indicated below.

(1) ILS, MLS, and PAR

Inoperative Component or Aid	Approach Category	Increase DH	Increase Visibility
MM*	ABC	50 feet	None
MM*	D	50 feet	¼ mile
ALSF 1 & 2, MALSR, & SSALR	ABCD	None	¼ mile

*Not applicable to PAR

(2) ILS with visibility minimum of 1,800 or 2,000 RVR.

MM	ABC	50 feet	To 2400 RVR
MM	D	50 feet	To 4000 RVR
ALSF 1 & 2, MALSR, & SSALR	ABCD	None	To 4000 RVR
TDZL, RCLS	ABCD	None	To 2400 RVR
RVR	ABCD	None	To ½ mile

(3) VOR, VOR/DME, VORTAC, VOR (TAC), VOR/DME (TAC), LOC, LOC/DME, LDA, LDA/DME, SDF, SDF/DME, RNAV, and ASR

Inoperative Visual Aid	Approach Category	Increase MDA	Increase Visibility
ALSF 1 & 2, MALSR, & SSALR	ABCD	None	½ mile
SSALS, MALS & ODALS	ABC	None	¼ mile

(4) NDB

ALSF 1 & 2, MALSR, & SSALR	C	None	½ mile
	ABD	None	¼ mile
MALS, SSALS, ODALS	ABC	None	¼ mile

LEGEND

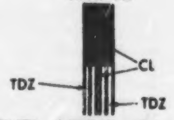
INSTRUMENT APPROACH PROCEDURES (CHARTS)
APPROACH LIGHTING SYSTEMS – UNITED STATES

Each approach lighting system indicated on Airport Diagrams will bear a system identification indicated in legend.

A dot " • " portrayed with approach lighting letter identifier indicates sequenced flashing lights (F) installed with the approach lighting system e.g. (A1)

RUNWAY TOUCHDOWN ZONE AND CENTERLINE LIGHTING SYSTEMS

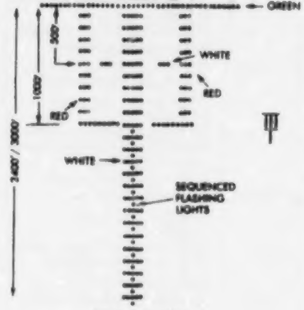
TDZ/CL



AVAILABILITY of TDZ/CL will be shown by NOTE in SKETCH e.g. "TDZ/CL Rwy 15"

Ⓐ APPROACH LIGHTING SYSTEM

ALSF-2

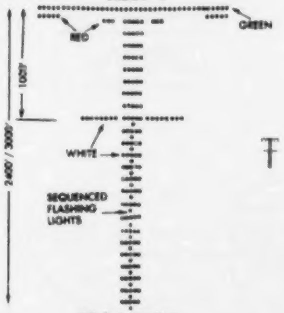

GREEN
500'
WHITE
RED
1000'
RED
2400' / 3000'
WHITE
SEQUENCED FLASHING LIGHTS

(High Intensity)

LENGTH 2400/3000 FEET

(A1) APPROACH LIGHTING SYSTEM

ALSF-1


RED
GREEN
1000'
2400' / 3000'
WHITE
SEQUENCED FLASHING LIGHTS

(High intensity)

LENGTH 2400/3000 FEET

SHORT APPROACH LIGHTING SYSTEM

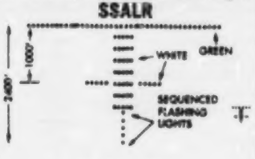
(A2) **SALS / SALSF**

(High Intensity)

SAME AS INNER 1500' OF ALSF-1

(A3) SIMPLIFIED SHORT APPROACH LIGHTING SYSTEM with Runway Alignment Indicator Lights

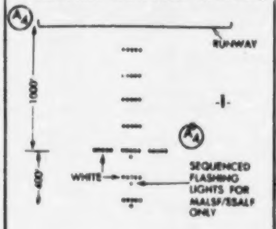
SSALR


1000'
2400'
WHITE
GREEN
SEQUENCED FLASHING LIGHTS

(High Intensity)

LENGTH 2400 FEET

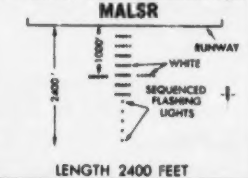
MEDIUM INTENSITY (MALS and MALSF) OR SIMPLIFIED SHORT (SSALS and SSALF) APPROACH LIGHTING SYSTEMS


(A4)
RUNWAY
1000'
(A4)
400'
WHITE
SEQUENCED FLASHING LIGHTS FOR MALSF/SSALF ONLY

LENGTH 1400 FEET

(A5) MEDIUM INTENSITY APPROACH LIGHTING SYSTEM with Runway Alignment Indicator Lights

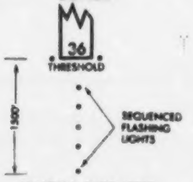
MALSR


1000'
RUNWAY
WHITE
2400'
SEQUENCED FLASHING LIGHTS

LENGTH 2400 FEET

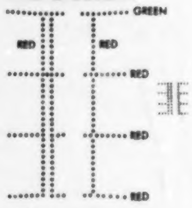
⊕ OMNIDIRECTIONAL APPROACH LIGHTING SYSTEM

ODALS


36
THRESHOLD
1500'
SEQUENCED FLASHING LIGHTS

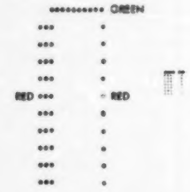
LENGTH 1500 FEET

Ⓓ NAVY PARALLEL ROW AND CROSSBAR


GREEN
RED
RED
RED
RED
RED

LENGTH 1500' FEET

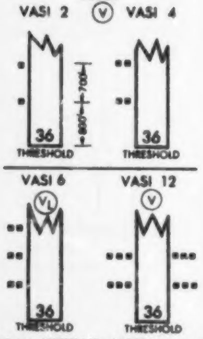
Ⓘ AIR FORCE OVERRUN


GREEN
RED
RED

LENGTH 1000 FEET

VISUAL APPROACH SLOPE INDICATOR

VASI


VASI 2
Ⓥ
VASI 4
700'
800'
36
THRESHOLD
36
THRESHOLD
VASI 6
(VL)
VASI 12
Ⓥ
36
THRESHOLD
36
THRESHOLD

Ⓥ VISUAL APPROACH SLOPE INDICATOR WITH STANDARD THRESHOLD CLEARANCE PROVIDED.

ALL LIGHTS WHITE - TOO HIGH
FAR LIGHTS RED
NEAR LIGHTS WHITE } ON GLIDE SLOPE
ALL LIGHTS RED - TOO LOW

(VL) VISUAL APPROACH SLOPE INDICATOR WITH A THRESHOLD CROSSING HEIGHT TO ACCOMODATE LONG BODIED OR JUMBO AIRCRAFT.

GENERAL INFORMATION & ABBREVIATIONS

★ Indicates control tower or ATIS operates non-continuously.
Distances in nautical miles (except visibility in statute miles and Runway Visual Range in hundreds of feet).
Runway Dimensions in feet.
Elevations in feet Mean Sea Level (MSL).
Ceilings in feet above airport elevation.
Radials/bearings/headings/courses are magnetic.

ADF	Automatic Direction Finder
ALS	Approach Light System
APP CON	Approach Control
ARR	Arrival
ASR/PAR	Published Radar Minimums at this Airport
ATIS	Automatic Terminal Information Service
BC	Back Course
C	Circling
CAT	Category
Chan	Channel
CLNC DEL	clearance delivery
DH	Decision Height
DME	Distance Measuring Equipment
DR	Dead Reckoning
ELEV	elevation
FAF	Final Approach Fix
FM	Fan Marker
GPI	Ground Point of Intercept (ion)
GS	Glide Slope
HAA	Height Above Airport
HAL	Height Above Landing
HAT	Height Above Touchdown
HIRL	High Intensity Runway Lights
IAF	Initial Approach Fix
ICAO	International Civil Aviation Organization
Intcp	Intercept
INT, INTXN	Intersection
LDA	Localizer Type Directional Aid
Ldg	Landing
LDIN	Lead in Light System
LIRL	Low Intensity Runway Lights
LOC	Localizer
LR	Lead Radial. Provides at least 2 NM (Copter 1 NM) of lead to assist in turning onto the intermediate/final course
MALS	Medium Intensity Approach Light System
MALSR	Medium Intensity Approach Light Systems with RAIL
MAP	Missed Approach Point
MDA	Minimum Descent Altitude
MIRL	Medium Intensity Runway Lights
MLS	Microwave Landing System
NA	Not Authorized
NDB	Non-directional Radio Beacon
NoPT	No Procedure Turn Required (Procedure Turn shall not be executed without ATC clearance)
ODALS	Omnidirectional Approach Light System
RA	Radio Altimeter setting height
Radar Required	Radar vectoring required for this approach
RAIL	Runway Alignment Indicator Lights
RBn	Radio Beacon
REIL	Runway End Identifier Lights
RCLS	Runway Centerline Light System
RNAV	Area Navigation
RRL	Runway Remaining Lights
Runway Touchdown Zone.	First 3000' of Runway
RVR	Runway Visual Range
S	Straight-in
SALS	Short Approach Light System
SSALR	Simplified Short Approach Light System with RAIL
SDF	Simplified Directional Facility
TA	Transition Altitude
TAC	TACAN
TCH	Threshold Crossing Height (height in feet Above Ground Level)
TDZ	Touchdown Zone
TDZE	Touchdown Zone Elevation
TDZL	Touchdown Zone Lights
TLv	Transition Level
VDP	Visual Descent Point
WPT	Waypoint (RNAV)

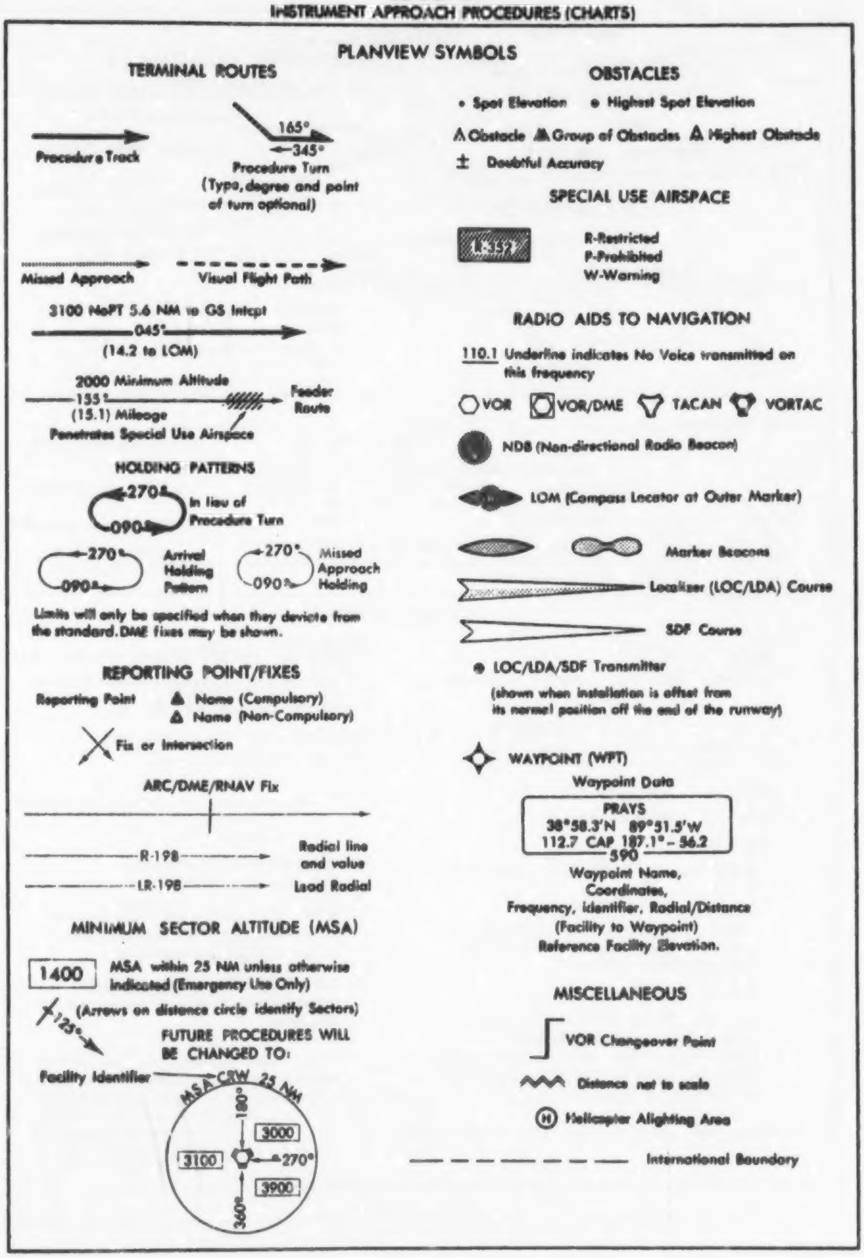
RADIO CONTROL AIRPORT LIGHTING SYSTEM

KEY MIKE	FUNCTION
7 times within 5 seconds	Highest intensity available
5 times within 5 seconds	Medium or lower intensity (Lower REIL or REIL-off)
3 times within 5 seconds	Lowest intensity available (Lower REIL or REIL-off)

Available systems will be indicated on Instrument Approach Procedure (IAP) Charts, below the Minimums Data, as follows:

ACTIVATE MIRL Rwy 36-122.8, ACTIVATE MALSR Rwy 7-122.8
ACTIVATE VASI and REIL Rwy 7-122.8, ACTIVATE HIRL Rwy 7-25 – 122.8

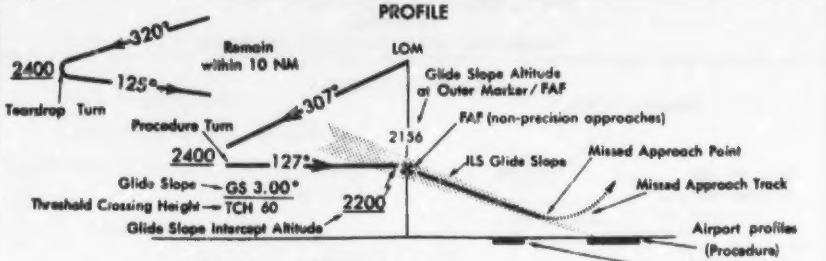
LEGEND
INSTRUMENT APPROACH PROCEDURES (CHARTS)


PLANVIEW SYMBOLS
TERMINAL ROUTES
Procedure Track
165°
345°
Procedure Turn
(Type, degree and point of turn optional)
Missed Approach
Visual Flight Path
3100 NoPT 5.6 NM to GS Intcpt
045°
(14.2 to LOM)
2000 Minimum Altitude
155°
(15.1) Mileage
Feeder Route
Penetrates Special Use Airspace
HOLDING PATTERNS
270°
090°
In lieu of Procedure Turn
270°
090°
Arrival Holding Pattern
270°
090°
Missed Approach Holding
Limits will only be specified when they deviate from the standard. DME fixes may be shown.
REPORTING POINT/FIXES
Reporting Point
Name (Compulsory)
Name (Non-Compulsory)
Fix or Intersection
ARC/DME/RNAV Fix
R-198
Radial line and value
LR-198
Lead Radial
MINIMUM SECTOR ALTITUDE (MSA)
1400
MSA within 25 NM unless otherwise indicated (Emergency Use Only)
125°
(Arrows on distance circle identify Sectors)
FUTURE PROCEDURES WILL BE CHANGED TO:
Facility Identifier
MSA CRW 25 NM
180°
3000
3100
270°
3900
360°
OBSTACLES
Spot Elevation
Highest Spot Elevation
Obstacle
Group of Obstacles
Highest Obstacle
± Doubtful Accuracy
SPECIAL USE AIRSPACE
R-3571
R-Restricted
P-Prohibited
W-Warning
RADIO AIDS TO NAVIGATION
110.1 Underline indicates No Voice transmitted on this frequency
VOR
VOR/DME
TACAN
VORTAC
NDB (Non-directional Radio Beacon)
LOM (Compass Locator at Outer Marker)
Marker Beacons
Localizer (LOC/LDA) Course
SDF Course
LOC/LDA/SDF Transmitter
(shown when installation is offset from its normal position off the end of the runway)
WAYPOINT (WPT)
Waypoint Data
PRAYS
38°58.3'N 89°51.5'W
112.7 CAP 187.1° – 56.2
590
Waypoint Name, Coordinates, Frequency, Identifier, Radial/Distance (Facility to Waypoint) Reference Facility Elevation.
MISCELLANEOUS
VOR Changeover Point
Distance not to scale
H
Helicopter Alighting Area
International Boundary

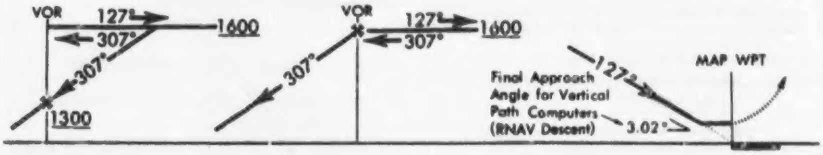
LEGEND

INSTRUMENT APPROACH PROCEDURES (CHARTS)

PROFILE


2400
320°
125°
Teardrop Turn
Remain within 10 NM
LOM
307°
Procedure Turn
2400
127°
Glide Slope Altitude at Outer Marker / FAF
2156
FAF (non-precision approaches)
ILS Glide Slope
Missed Approach Point
Missed Approach Track
Glide Slope — GS 3.00°
Threshold Crossing Height — TCH 60
2200
Glide Slope Intercept Altitude
Airport profiles
(Procedure)
(Non-procedure)

DESCENT FROM HOLDING PATTERN


VOR
127°
1600
307°
307°
1300
VOR
127°
1600
307°
307°
127°
MAP WPT
Final Approach Angle for Vertical Path Computers (RNAV Descent)
3.02°

FACILITIES/FIXES

Z
FM
NDB (RBn)
VOR
VORTAC
TACAN
WPT

FIX
INT

ALTITUDES

3500	2300	4800	2200
Mandatory Altitude	Minimum Altitude	Maximum Altitude	Recommended Altitude

Altitudes precede fix or are arrowed to show where they apply.

Glide Slope intercept altitude is the same as the minimum altitude over FAF for non-precision only approach, except as otherwise noted.

✱ Final Approach Fix (FAF) (for non-precision approaches)

↗ Glide Slope Intercept

▼ Visual Descent Point (VDP)

- - - - - -➤ Visual Flight Path

AIRPORT SKETCH

Runways

▇ Hard Surface

▒ Other Than Hard Surface

▓ Hardstands/Taxiways

☐ Closed Runways and Taxiways

⬚ Under Construction

▩ Metal Surface

▇▒ Over-run

─┼─ Displaced Threshold

Arresting Gear

⌐ uni-directional ⌐ bi-directional ┆ Jet Barrier

▪ Control Tower
When Control Tower and Rotating Beacon are co-located, Beacon symbol will be used and also identified as TWR.

★ Rotating Airport Beacon.

■ U.S. Navy Optical Landing System (OLS) "OLS" location is shown because of its height of approximately 7 feet and proximity to edge of runway may create on obstruction for some types of aircraft.

Approach light symbols are shown on a separate legend.

Ⓗ ⊞ 🄷 △ ⊞ Helicopter Alighting Areas

Negative Symbols used to identify Copter Procedure landing point. ● ⊞ ■ ▲ ⊞

Note: The prop type symbol is being phased out.

TDZE 123 Runway TDZ elevation

0.8% — UP Total Runway Gradient
(shown when runway gradient exceeds 0.3%)

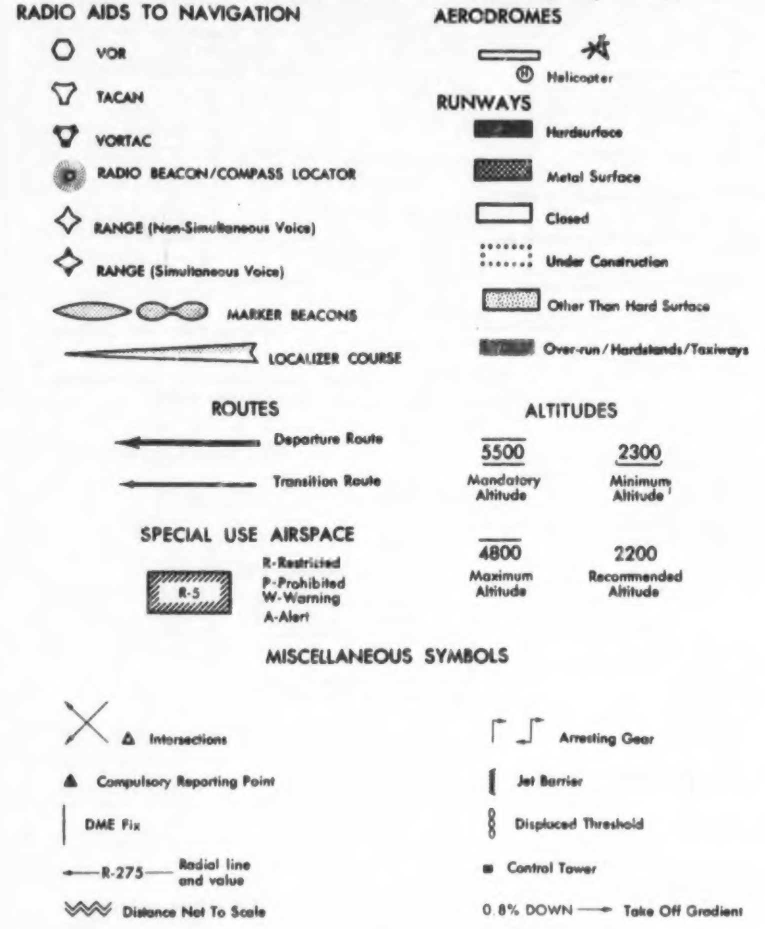
MINIMA DATA

△ Alternate Minimums not standard.
U.S. Army and Civil refer to tabulation.

△NA IFR minimums are Not Authorized for alternate use due to unmonitored facility or absence of weather reporting service.

▽ Take-off Minimums not standard and/or Departure Procedures are published. Refer to tabulation.

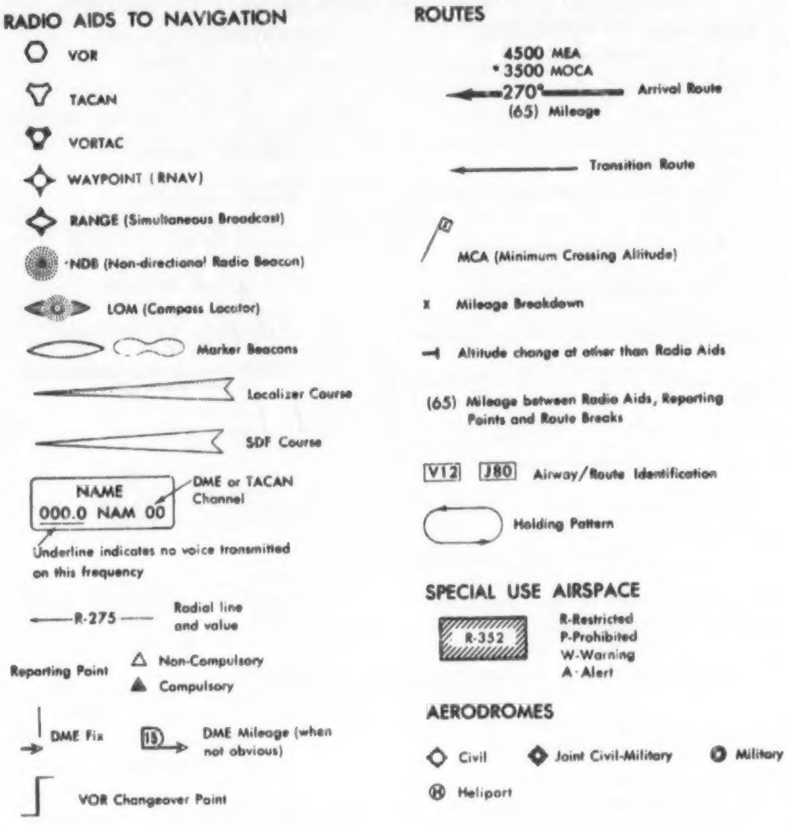
LEGEND
STANDARD INSTRUMENT DEPARTURE (SID) CHARTS


RADIO AIDS TO NAVIGATION
VOR
TACAN
VORTAC
RADIO BEACON/COMPASS LOCATOR
RANGE (Non-Simultaneous Voice)
RANGE (Simultaneous Voice)
MARKER BEACONS
LOCALIZER COURSE
AERODROMES
H
Helicopter
RUNWAYS
Hardsurface
Metal Surface
Closed
Under Construction
Other Than Hard Surface
Over-run/Hardstands/Taxiways
ROUTES
Departure Route
Transition Route
ALTITUDES
5500
Mandatory Altitude
2300
Minimum Altitude
4800
Maximum Altitude
2200
Recommended Altitude
SPECIAL USE AIRSPACE
R-5
R-Restricted
P-Prohibited
W-Warning
A-Alert
MISCELLANEOUS SYMBOLS
Intersections
Compulsory Reporting Point
DME Fix
R-275
Radial line and value
Distance Not To Scale
Arresting Gear
Jet Barrier
Displaced Threshold
Control Tower
0.8% DOWN
Take Off Gradient
VOR Changeover Point
V-25
Airway Identification

Outer Marker (OM)-continuous dashes
Middle Marker (MM)-alternate dots and dashes.
117.6-frequency underlined indicates no voice capability.
All radials/bearings are magnetic.
All mileages are nautical.
Runway dimensions in feet.
Elevation in feet-MSL.

LEGEND

STANDARD TERMINAL ARRIVALS (STAR) CHARTS


RADIO AIDS TO NAVIGATION
VOR
TACAN
VORTAC
WAYPOINT (RNAV)
RANGE (Simultaneous Broadcast)
NDB (Non-directional Radio Beacon)
LOM (Compass Locator)
Marker Beacons
Localizer Course
SDF Course
NAME
000.0 NAM 00
DME or TACAN Channel
Underline indicates no voice transmitted on this frequency
R-275
Radial line and value
Reporting Point
Non-Compulsory
Compulsory
DME Fix
15
DME Mileage (when not obvious)
VOR Changeover Point
ROUTES
4500 MEA
*3500 MOCA
270°
Arrival Route
(65) Mileage
Transition Route
MCA (Minimum Crossing Altitude)
Mileage Breakdown
Altitude change at other than Radio Aids
(65) Mileage between Radio Aids, Reporting Points and Route Breaks
V12
J80
Airway/Route Identification
Holding Pattern
SPECIAL USE AIRSPACE
R-352
R-Restricted
P-Prohibited
W-Warning
A-Alert
AERODROMES
Civil
Joint Civil-Military
Military
Heliport

Entry facility/fix identified by name and symbol only.
All radials/bearings are magnetic
All mileages are nautical
All altitudes in feet–MSL
MEA – Minimum Enroute Altitude
MOCA – Minimum Obstruction Clearance Altitude

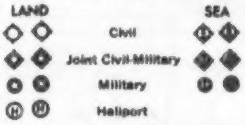
ENROUTE LOW ALTITUDE – U. S.

For use up to but not including 18,000′ MSL

LEGEND

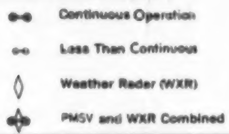
AERODROMES

Aerodromes/Seadromes shown in BLUE have an approved Low Altitude Instrument Approach Procedure published. Those shown in DARK BLUE have an approved DOD Low Altitude Instrument Approach Procedure and/or approved DOD RADAR MINIMA published in DOD FLIPS. Aerodromes/Seadromes shown in BROWN do not have a published Instrument Approach Procedure.


LAND
SEA
Civil
Joint Civil-Military
Military
Heliport

RELATED FACILITIES

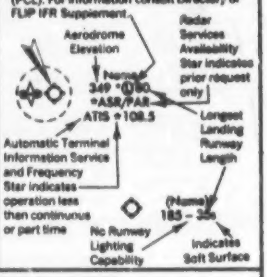
Pilot to Metro Service (PMSV)


Continuous Operation
Less Than Continuous
Weather Radar (WXR)
PMSV and WXR Combined

Published ILS and/or Localizer Procedure available
Published SDF Procedure available

1. Parentheses around aerodrome name indicate military landing rights not available.
2. Aerodrome elevation given in feet above or below mean sea level.
3. Length of longest runway given to nearest 100 feet with 70 feet as the dividing point (Add 00).
4. Aerodrome symbol may be offset for enroute navigation aids.
5. Pvt-Private use, not available to general public.

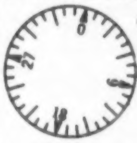
Night Landing Capability. Asterisk indicates lighting on request or operating part of night only. Circle indicates Pilot Controlled Lighting (PCL). For information consult Directory or FLIP IFR Supplement.


Aerodrome Elevation
Radar Services Availability Star indicates prior request only
Name
349 *Ⓛ 80
*ASR/PAR
ATIS *108.5
Longest Landing Runway Length
Automatic Terminal Information Service and Frequency Star indicates operation less than continuous or part time
(Name)
185 – 35s
No Runway Lighting Capability
Indicates Soft Surface

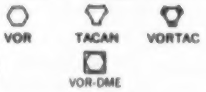
RADIO AIDS TO NAVIGATION AND COMMUNICATION BOXES

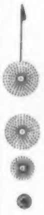
RADIO AIDS TO NAVIGATION

VHF/UHF Aids are depicted in BLUE
LF/MF Aids are depicted in BROWN



COMPASS ROSE Oriented to Magnetic North. Size of Compass Rose has no significance. Smaller sizes are used in congested areas.


VOR
TACAN
VORTAC
VOR-DME

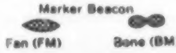


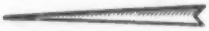
LF/MF Non-directional Radiobeacon or Marine Radiobeacon with magnetic north indicator

UHF Non-directional Radiobeacon

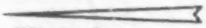
Compass Locator Beacon

Consolan Station


Marker Beacon
Fan (FM)
Bone (BM)



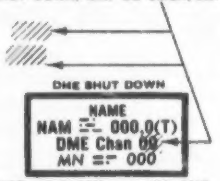
ILS Localizer Course with ATC Function. Feathered side indicates Blue Sector



SDF Localizer Course with ATC Function

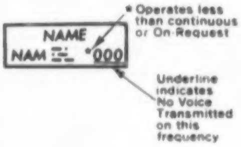
RADIO AIDS TO NAVIGATION DATA BOXES

Abnormal Status Underprint for Affected Data, e.g., TO BE CMSN, SHUT DOWN, MAY BE CMSN, etc.


DME SHUT DOWN
NAME
NAM 000.0(T)
DME Chan 00
MN 000

VOR with TACAN compatible DME

(T) Frequency protection Usable range at 12,000′–25 NM


* Operates less than continuous or On-Request
NAME
NAM *000
Underline indicates No Voice Transmitted on this frequency

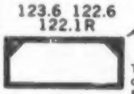
TACAN channels are without voice but are not underlined

Norfolk Weather Radio ○ U.S. Weather Station with Voice Communication

IDENT 000 ⊙ Commercial Broadcast Station

AIR/GROUND COMMUNICATION BOXES

HEAVY LINE BOXES indicate Flight Service Station (FSS). Frequencies 255.4, 122.2, and emerg. 243.0 and 121.5 are normally available at all FSS's and are not shown above boxes. All other freqs available at FSS's are shown. Frequencies transmit and receive except those followed by R or T:
R – receive only T – transmit only


123.6 122.6
122.1R

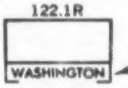
Triangle in corner of box indicates Enroute Flight Advisory Service Frequency 122.0. Voice Call e.g., "Los Angeles Flight Watch."

Frequencies positioned above thin line NAVAID boxes are remoted to the NAVAID site.

Other frequencies at the controlling FSS named are available, however altitude and terrain may determine their reception.

FAYETTEVILLE FYV

Name and identifier for FSS not associated with NAVAII


122.1R
WASHINGTON

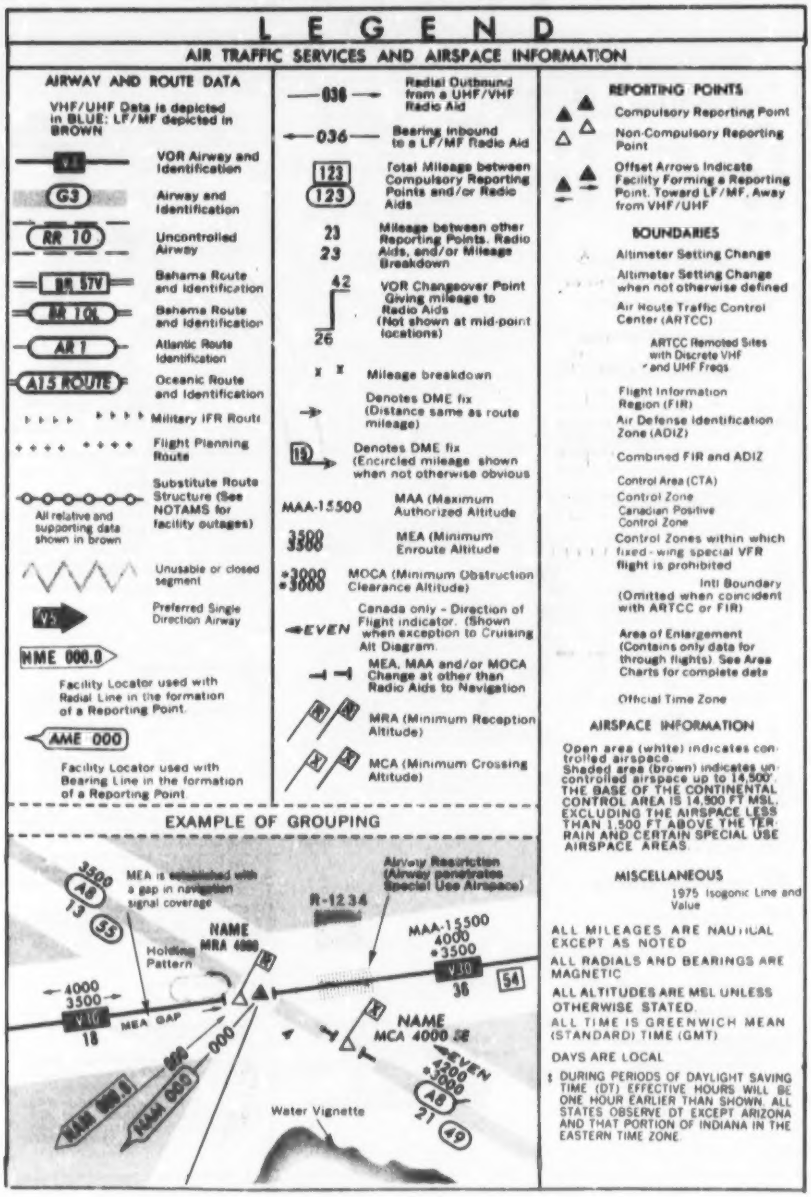
Controlling FSS Name

Thin line box, without frequencies and Controlling FSS name indicates no FSS frequencies available.

⊙ Flight Service Station (FSS)
Remote Communications Outlet (RCO)
Limited Remote Communications Outlet (LRCO)

ENROUTE LOW ALTITUDE – U. S.

For use up to but not including 18,000′ MSL



L E G E N D

AIR TRAFFIC SERVICES AND AIRSPACE INFORMATION

AIRWAY AND ROUTE DATA

VHF/UHF Data is depicted in BLUE: LF/MF depicted in BROWN

VOR Airway and Identification

Airway and Identification

Uncontrolled Airway

Bahama Route and Identification

Bahama Route and Identification

Atlantic Route Identification

Oceanic Route and Identification

Military IFR Route

Flight Planning Route

Substitute Route Structure (See NOTAMS for facility outages)

All relative and supporting data shown in brown

Unusable or closed segment

Preferred Single Direction Airway

Facility Locator used with Radial Line in the formation of a Reporting Point.

Facility Locator used with Bearing Line in the formation of a Reporting Point

Radial Outbound from a UHF/VHF Radio Aid

Bearing Inbound to a LF/MF Radio Aid

Total Mileage between Compulsory Reporting Points and/or Radio Aids

Mileage between other Reporting Points, Radio Aids, and/or Mileage Breakdown

VOR Changeover Point Giving mileage to Radio Aids (Not shown at mid-point locations)

Mileage breakdown

Denotes DME fix (Distance same as route mileage)

Denotes DME fix (Encircled mileage shown when not otherwise obvious

MAA (Maximum Authorized Altitude

MEA (Minimum Enroute Altitude

MOCA (Minimum Obstruction Clearance Altitude)

Canada only – Direction of Flight indicator. (Shown when exception to Cruising Alt Diagram.

MEA, MAA and/or MOCA Change at other than Radio Aids to Navigation

MRA (Minimum Reception Altitude)

MCA (Minimum Crossing Altitude)

REPORTING POINTS

Compulsory Reporting Point

Non-Compulsory Reporting Point

Offset Arrows Indicate Facility Forming a Reporting Point. Toward LF/MF, Away from VHF/UHF

BOUNDARIES

Altimeter Setting Change

Altimeter Setting Change when not otherwise defined

Air Route Traffic Control Center (ARTCC)

ARTCC Remoted Sites with Discrete VHF and UHF Freqs

Flight Information Region (FIR)

Air Defense Identification Zone (ADIZ)

Combined FIR and ADIZ

Control Area (CTA)

Control Zone

Canadian Positive Control Zone

Control Zones within which fixed-wing special VFR flight is prohibited

Intl Boundary (Omitted when coincident with ARTCC or FIR)

Area of Enlargement (Contains only data for through flights). See Area Charts for complete data

Official Time Zone

AIRSPACE INFORMATION

Open area (white) indicates controlled airspace.
Shaded area (brown) indicates uncontrolled airspace up to 14,500′.
THE BASE OF THE CONTINENTAL CONTROL AREA IS 14,500 FT MSL, EXCLUDING THE AIRSPACE LESS THAN 1,500 FT ABOVE THE TERRAIN AND CERTAIN SPECIAL USE AIRSPACE AREAS.

MISCELLANEOUS

1975 Isogonic Line and Value

ALL MILEAGES ARE NAUTICAL EXCEPT AS NOTED

ALL RADIALS AND BEARINGS ARE MAGNETIC

ALL ALTITUDES ARE MSL UNLESS OTHERWISE STATED.

ALL TIME IS GREENWICH MEAN (STANDARD) TIME (GMT)

DAYS ARE LOCAL

‡ DURING PERIODS OF DAYLIGHT SAVING TIME (DT) EFFECTIVE HOURS WILL BE ONE HOUR EARLIER THAN SHOWN. ALL STATES OBSERVE DT EXCEPT ARIZONA AND THAT PORTION OF INDIANA IN THE EASTERN TIME ZONE.

EXAMPLE OF GROUPING

MEA is established with a gap in navigation signal coverage

Airway Restriction (Airway penetrates Special Use Airspace)

Holding Pattern

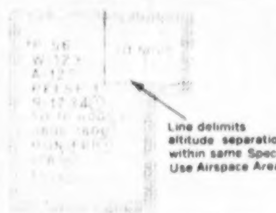
Water Vignette

ENROUTE LOW ALTITUDE – U. S.

For use up to but not including 18,000′ MSL

LEGEND

SPECIAL USE AIRSPACE


Line delimits altitude separation within same Special Use Airspace Area

P - Prohibited Area
R - Restricted Area
W - Warning Area
D - Danger Area (Canada)
A - Alert Area

MOA-Military Operations Area in BROWN

SPECIAL USE AIRSPACE WILL INCLUDE:

① AREA IDENTIFICATION: In Canada area ident is preceded by the letters CY (CANADA) followed by a number (PROVINCE).

② EFFECTIVE ALTITUDE CEILINGS ARE SHOWN UP TO BUT NOT INCLUDING 18,000′. WHEN THE AIRSPACE ENCOMPASSES ALL ALTITUDES IN THE LOW ALTITUDE STRUCTURE, NO ALTITUDE WILL BE SHOWN. THE WORD "TO" (AN ALTITUDE) MEANS "TO AND INCLUDING" (THAT ALTITUDE).

③ OPERATING TIME: When continuous no time is shown.
Days: Sunrise to Sunset
Nights: Sunset to Sunrise
Hours: Given in GMT, e.g., 0600-1300Z.
Mon-Fri: Indicates area does not exist on Sat. or Sun.
1 Mar-15 June: Indicates area in use only through dates given.
By NOTAM: Area activated by NOTAM.
Days are local.

④ Weather Conditions during which the area is in operation. When continuous no weather is shown.
VFR: Used only during VFR conditions.
IFR: Used only during IFR conditions.

⑤ Voice Call of controlling Agency for enroute clearance through area. No A/G unless indicated.

† Indicates complete information in tabulation on front panel

Special Air Traffic Rules

Military Training Routes (MTR's)

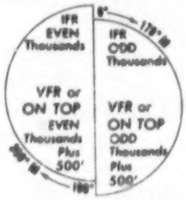
Military Training Routes (MTR's) 5 NM or less

Military Training Routes (MTR's) greater than 5 NM

Arrow indicates Single Direction Route

All MTR's may extend from the surface upwards.
All MTR's (IR and VR) except those VR's at or below 1500′ AGL are shown.
CAUTION: Inset charts do not depict Military Training Routes (MTR's).

CRUISING ALTITUDES - U. S.


IFR
EVEN
Thousands
IFR
ODD
Thousands
VFR or
ON TOP
EVEN
Thousands
Plus
500′
VFR or
ON TOP
ODD
Thousands
Plus
500′
0°
179° M
180°
359° M

VFR above 3000′ AGL
unless otherwise authorized by ATC
IFR Outside controlled airspace
IFR within controlled airspace as assigned by ATC
All courses are magnetic

ENROUTE HIGH ALTITUDE - U.S.

For use at and above 18,000′ MSL

LEGEND

AERODROMES

Aerodromes shown have a minimum of 5000′ hard surfaced runway and have an approved Instrument Approach Procedure published. The DOD FLIP Terminal High Altitude contains only those shown in DARK BLUE.

Civil

Joint Civil-Military

Military

Parentheses around aerodrome name indicate military landing rights not available

Aerodrome symbol may be displaced for enroute navigational aids

AIR TRAFFIC SERVICES AND AIRSPACE INFORMATION

ROUTE DATA

VHF/UHF Data is depicted in BLUE. LF/MF Data is depicted in BROWN

Jet Route

Oceanic Route

Substitute Route Structure

All relative and supporting data shown in brown

(Via or by-passing temporarily shutdown navigational aids). See NOTAMS or appropriate publications for specific information.

Unusable Route Segment

Military IFR Route

Flight Planning Route

Jet Route Identification

Preferred Single Direction Jet Route

Canadian High Level Airway Identification

A15 ROUTE — Oceanic Route Identification

AR 1 — Atlantic Route Identification

115.9 NAM — Facility Locator used with Radial Line in the formation of a Reporting point

275 ANM — Facility Locator used with Bearing Line in the formation of a Reporting Point

— 092 → Radial Outbound from a VHF/UHF Navigational Aid

← 270 — Bearing Inbound to a LF/MF Navigational Aid

123, 146 — Total Mileage between Compulsory Reporting Points and/or Radio Aids

23, 45 — Mileage between other Reporting Points, Radio Aids, and/or Mileage Breakdown

42, 26 — VOR Changeover Point Giving mileage to Radio Aids (Not shown when less than 5 NM from the mid point in either direction

Mileage Breakdown

Denotes DME fix. (Distance same as route mileage)

15 — Denotes DME fix (Encircled mileage shown when not otherwise obvious)

MAA-40000 — MAA (Maximum Authorized Altitude) Shown along Routes when other than 45,000′

MEA-24000 — MEA (Minimum Enroute Altitude) Shown along Routes when other than 18,000′

MEA and/or MAA Change at other than Radio Aids to Navigation

MRA (Minimum Reception Altitude)

REPORTING POINTS

▲ ▲ Compulsory Reporting Point

△ △ Non-Compulsory Reporting Point

Off-set Arrows Indicate Facility Forming a Reporting Point Toward LF/MF Away From VHF/UHF Radio Aid

Non-Compulsory Reporting Indicator (No report required at the next compulsory reporting point.)

ALL ALTITUDES ARE MSL UNLESS OTHERWISE STATED.

BOUNDARIES

Air Route Traffic Control Center (ARTCC)

Air Defense Identification Zone (ADIZ)

Flight Information Region (FIR)

Upper Information Region (UIR)

Adjoining ADIZ

Combined FIR and UIR

Control Area (CTA)

Upper Control Area (UTA)

International Boundary (Not shown when coincident with ARTC or FIR)

Official Time Zone

AIRSPACE INFORMATION

Open area (white) indicates controlled airspace

Shaded area (brown) indicates uncontrolled airspace

Continental Control Area

That airspace within the conterminous United States excluding certain special use airspace areas

Continental Positive Control Area

That airspace within the continental control area from 18,000 ft MSL to FL 600 within the conterminous United States excluding the Santa Barbara Island, Farallon Island and the portion south of Lat 25°04′00″ N

Air Traffic Service Sample

CTA FIR
MIAMI OCEANIC
KZMA

Additional Control Area Limit

MISCELLANEOUS

Registration marks Refer to index on Title Panel

1975 Isogonic Line and Value shown each 4°

ALL MILEAGES ARE NAUTICAL EXCEPT AS NOTED

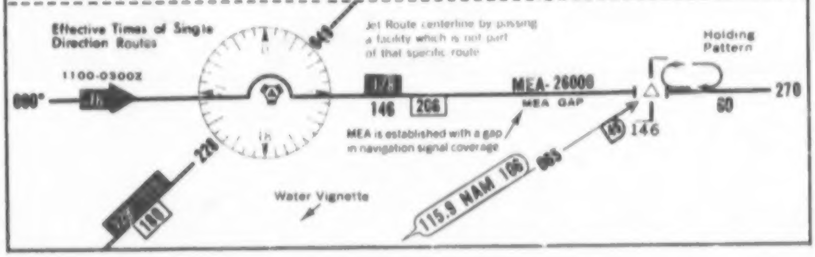
ALL RADIALS AND BEARINGS ARE MAGNETIC

ALL TIME IS GREENWICH MEAN (STANDARD) TIME (GMT)

DAYS ARE LOCAL

‡ DURING PERIODS OF DAYLIGHT SAVING TIME (DT) EFFECTIVE HOURS WILL BE ONE HOUR EARLIER THAN SHOWN. ALL STATES OBSERVE DT EXCEPT ARIZONA AND THAT PORTION OF INDIANA IN THE EASTERN TIME ZONE.

EXAMPLE OF GROUPING


Effective Times of Single Direction Routes
1100-0300Z
090°
040
Jet Route centerline by passing a facility which is not part of that specific route
146
206
MEA-26000
MEA GAP
MEA is established with a gap in navigation signal coverage
Holding Pattern
270
60
146
220
180
Water Vignette
115.9 NAM 106
065

ENROUTE HIGH ALTITUDE - U.S.

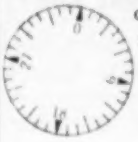
For use at and above 18,000' MSL

LEGEND

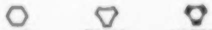
RADIO AIDS TO NAVIGATION

RADIO AIDS TO NAVIGATION

VHF/UHF Aids are depicted in BLUE
LF/MF Aids are depicted in BROWN



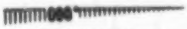
COMPASS ROSE
Oriented to
Magnetic North



VOR TACAN VORTAC

LF/MF Range with simultaneous Voice Signal Capability (Solid tip in "N" Quadrant)

LF/MF Range without simultaneous Voice Signal Capability



LF/MF Range Course
Feathered side indicates "A" Quadrant

LF/MF Non-directional Radiobeacon or Marine Radiobeacon

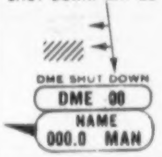
UHF Non-directional Radiobeacon

Consolan Station

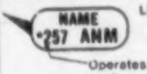
Name Weather Radio ○ U.S. Weather Station with Voice Communication

IDENTIFICATION BOXES

Abnormal Status Underprint for Affected Data, e.g. TO BE CMSN, SHUT DOWN, MAY BE CMSN, etc


DME SHUT DOWN
DME 00
NAME
000.0 MAN

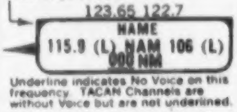
VOR with TACAN compatible DME


NAME
•257 ANM

LF/MF Radio Aid Identification and Frequency

Operates less than continuous or On-Request

Enroute Flight Advisory Service Frequency 122.0. Voice Call e.g., "Los Angeles Flight Watch."


123.65 122.7
NAME
115.9 (L) NAM 106 (L)
000 NM

Underline indicates No Voice on this frequency. TACAN Channels are without Voice but are not underlined.

Heavy line box indicates FSS and radio aid same name.

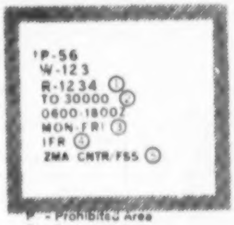
(FSS freqs available are 255.4, 122.2 selected discrete freqs, and emerg 243.0 and 121.5). The FSS high altitude VHF discrete freq(s) is shown above the box.

In Canada a heavy line box indicates stations with standard group freq 126.7, 122.2 122.1R

(L) Frequency Protection Usable range at 18,000' - 40 NM" "L" category radio aids located off Jet routes are depicted in screen blue

Radio Aids to Navigation without Classification are "H" Category

SPECIAL USE AIRSPACE


†P-56
W-123
R-1234 ①
TO 30000 ②
0600-1800Z
MON-FRI ③
IFR ④
ZMA CNTR/FSS ⑤

P - Prohibited Area
R - Restricted Area
W - Warning Area
D - Danger Area (Canada)
A - Alert Area (Canada)
MFA - Military Flying Area (Canada)

SPECIAL USE AIRSPACE WILL INCLUDE:

① AREA IDENTIFICATION: In Canada area ident is preceded by the letters CY (CANADA) followed by a number (PROVINCE).

② EFFECTIVE ALTITUDE WHEN CEILING IS NOT UNLIMITED OR FLOOR IS ABOVE 18,000'. THE WORD "TO" (AN ALTITUDE OR FLIGHT LEVEL) MEANS "TO AND INCLUDING" (THAT ALTITUDE OR FLIGHT LEVEL).

③ OPERATING TIME: When continuous no time is shown.
Days: Sunrise to Sunset
Nights: Sunset to Sunrise
Hours: Given in GMT, e.g. 0600-1800Z.
Mon-Fri: Indicates area does not exist on Sat. or Sun.
1 Mar-15 June: Indicates area in use only through dates given.
By NOTAM: Area activated by NOTAM.
Days are Local.

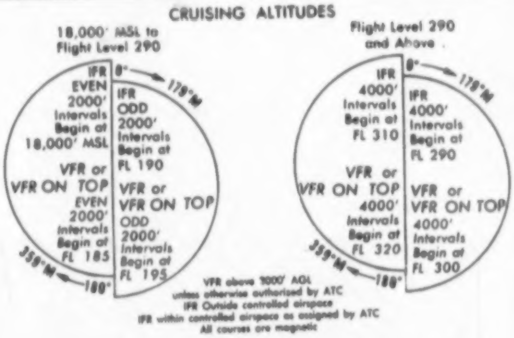
④ Weather Conditions during which the area is in operation. When continuous no weather is shown.
VFR: Used only when VFR Flight can be maintained.
IFR: Used only during IFR Conditions.

⑤ Voice Call of Controlling Agency for enroute clearance through area. No A/G unless indicated.

† Indicates complete information in tabulation on front panel.

A	·—	F	··—·	K	—·—	P	·——·	U	··—	1	·————	6	—····
B	—···	G	——·	L	·—··	Q	——·—	V	···—	2	··———	7	——···
C	—·—·	H	····	M	——	R	·—·	W	·——	3	···——	8	———··
D	—··	I	··	N	—·	S	···	X	—··—	4	····—	9	————·
E	·	J	·———	O	———	T	—	Y	—·——	5	·····	0	—————
								Z	——··				

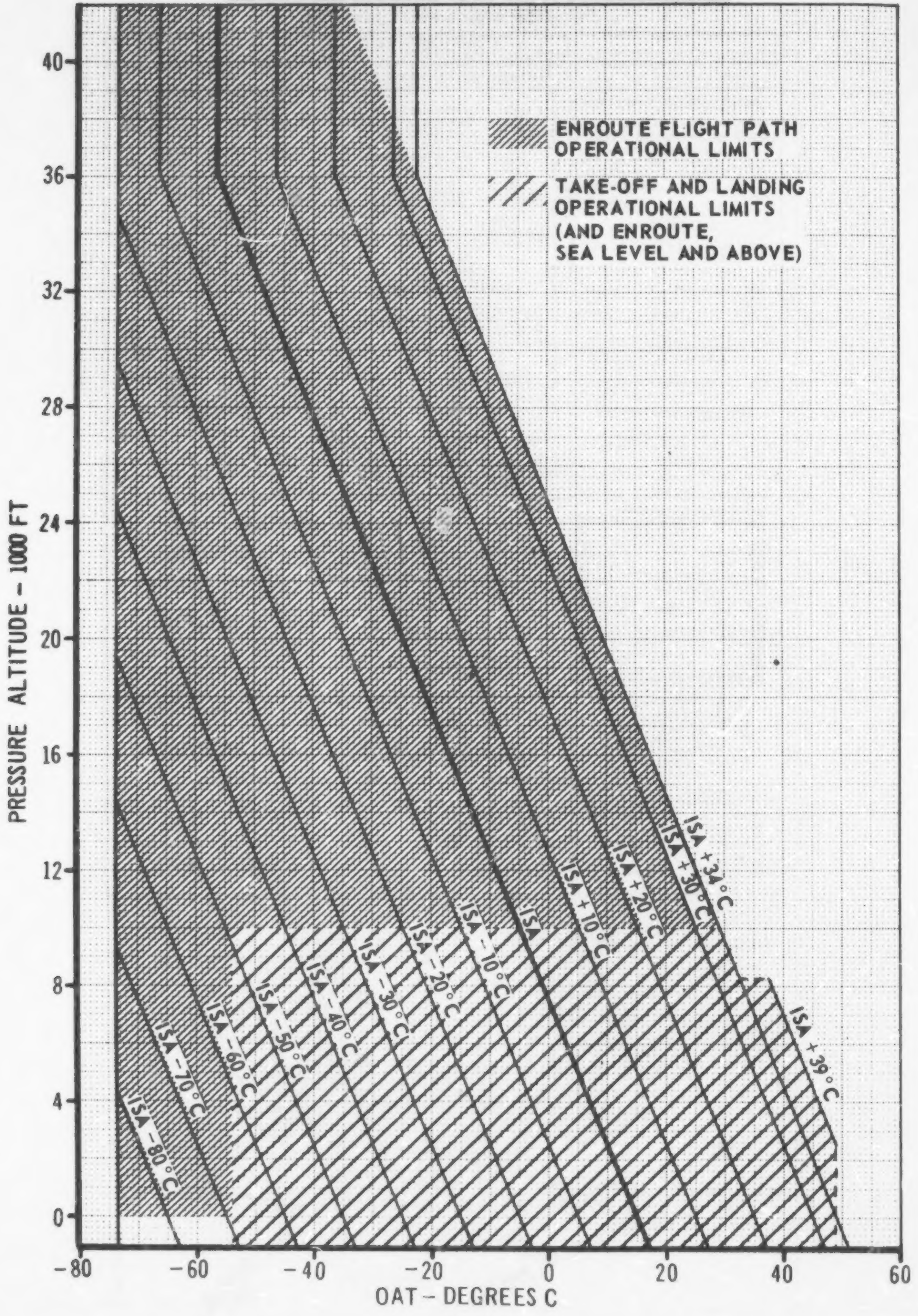
CRUISING ALTITUDES


18,000' MSL to Flight Level 290
IFR
EVEN
2000'
Intervals
Begin at
18,000' MSL
VFR or
VFR ON TOP
EVEN
2000'
Intervals
Begin at
FL 185
IFR
ODD
2000'
Intervals
Begin at
FL 190
VFR or
VFR ON TOP
ODD
2000'
Intervals
Begin at
FL 195
0°
179°M
180°
359°M
Flight Level 290 and Above
IFR
4000'
Intervals
Begin at
FL 310
VFR or
VFR ON TOP
4000'
Intervals
Begin at
FL 320
IFR
4000'
Intervals
Begin at
FL 290
VFR or
VFR ON TOP
4000'
Intervals
Begin at
FL 300
0°
179°M
180°
359°M

VFR above 3000' AGL
unless otherwise authorized by ATC
IFR Outside controlled airspace
IFR within controlled airspace as assigned by ATC
All courses are magnetic

NO VFR FLIGHTS WITHIN POSITIVE CONTROL AREA

RELATION OF TEMPERATURE TO ISA



PIREP

(U)UA ➤ /OV ➤ **FL**

MSG TYPE LOCATION OF PHENOMENA 3-LTR·IDENT RADIAL DISTANCE TIME (Z) FLT LVL

/TP ➤ **/SK ➤**

TYPE AIRCRAFT SKY COVER BASE AMOUNT TOP

/TA ➤ **/WV ➤**

TEMPERATURE-CELSIUS WIND-DIRECTION SPEED

/TB ➤ **/IC ➤**

TURBULENCE-INTENSITY TYPE* ALTITIDE** ICING-INTENSITY TYPE ALTITUDE**

/RM ➤

REMARKS (MOST HAZARDOUS ELEMENT REPORTED FIRST)

LEGEND: ➤ = SPACE SYMBOL *=ONLY FOR CAT **=ONLY IF DIFFERENT FROM FL

TURBULENCE REPORTING CRITERIA TABLE

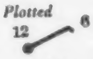
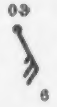
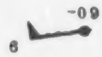
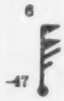
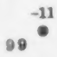
Intensity	*Aircraft Reaction*	*Reaction Inside Aircraft*
LIGHT	Turbulence that momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw). Report as *Light Turbulence*;* or Turbulence that causes slight, rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude. Report as *Light Chop.*	Occupants may feel a slight strain against seat belts or shoulder straps. Unsecured objects may be displaced slightly. Food service may be conducted and little or no difficulty is encountered in walking.
MODERATE	Turbulence that is similar to Light Turbulence but of greater intensity. Changes in altitude and/or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed. Report as *Moderate Turbulence*;* or Turbulence that is similar to Light Chop but of greater intensity. It causes rapid bumps or jolts without appreciable changes in aircraft altitude or attitude. Report as *Moderate Chop.*	Occupants feel definite strains against seat belts or shoulder straps. Unsecured objects are dislodged. Food service and walking are difficult.
SEVERE	Turbulence that causes large, abrupt changes in altitude and/or attitude. It usualy causes large variations in indicated airspeed. Aircraft may be momentarily out of control. Report as *Severe Turbulence.**	Occupants are forced violently against seat belts or shoulder straps. Unsecured objects are tossed about. Food service and walking are impossible.
EXTREME	Turbulence in which the aircraft is violently tossed about and is practically impossible to control. It may cause structural damage. Report as *Extreme Turbulence.**	

* **High level turbulence** (normally above 15,000 feet ASL) not associated with cumuliform **cloudiness, including thunderstorms, should be reported as CAT** (clear air turbulence) **preceded by the appropriate intensity, or light or moderate chop.**

INTENSITY	**ICE ACCUMULATION**
Trace	Ice becomes perceptible. Rate of accumulation slightly greater than rate of sublimation. It is not hazardous even though deicing/anti-icing equipment is not utilized, unless encountered for an extended period of time (over 1 hour).
Light	The rate of accumulation may create a problem if flight is prolonged in this environment (over 1 hour). Occasional use of deicing/anti-icing equipment removes/prevents accumulation. It does not present a problem if the deicing/anti-icing equipment is used.
Moderate	The rate of accumulation is such that even short encounters become potentially hazardous and use of deicing/anti-icing equipment or diversion is necessary.
Severe	The rate of accumulation is such that deicing/anti-icing equipment fails to reduce or control the hazard. Immediate diversion is necessary.

Pilot Report: Aircraft Identification, Location, Time (GMT), Intensity of Type,* Altitude/FL, Aircraft Type, IAS.

FORECAST WINDS AND TEMPERATURES ALOFT (FD)

Plotted	*Interpretation*
	12° C, wind 060° at 5 knots
	3° C, wind 160° at 25 knots
	−9° C, wind 260° at 50 knots
	−47° C, wind 360° at 115 knots
	−11° C, wind calm (light variable)

KEY TO AVIATION WEATHER OBSERVATIONS AND FORECASTS

KEY TO AVIATION WEATHER OBSERVATIONS . . . .

NOAA/PA 73029

LOCATION IDENTIFIER TYPE AND TIME OF REPORT*	SKY AND CEILING	VISIBILITY WEATHER AND OBSTRUCTION TO VISION	SEA-LEVEL PRESSURE	TEMPERATURE AND DEW POINT	WIND	ALTIMETER SETTING	REMARKS AND CODED DATA
MKC SA 0758	15 SCT M25 OVC	1R-K	132	/58/56	/1807	/993/	R04LVR20V40

SKY AND CEILING

Sky cover contractions are in ascending order. Figures preceding contractions are heights in hundreds of feet above station. Sky cover contractions are:

CLR Clear: Less than 0.1 sky cover.
SCT Scattered: 0.1 to 0.5 sky cover.
BKN Broken: 0.6 to 0.9 sky cover.
OVC Overcast: More than 0.9 sky cover.
— Thin (When prefixed to SCT, BKN, OVC)

—X Partial obscuration: 0.9 or less of sky hidden by precipitation or obstructon to vision (bases at surface.)

X Obscuration: 1.0 sky hidden by precipitation or obstruction to vision (bases at surface).

Letter preceding height of layer identifies ceiling layer and indicates how ceiling height was obtained. Thus:

E Estimated height
M Measured
W Indefinite

V=Immediately following numerical value, indicates a variable ceiling.

VISIBILITY

Reported in statute miles and fractions. (V=Variable)

WEATHER AND OBSTRUCTION TO VISION SYMBOLS

A	Hail	IC	Ice crystals	S	Snow
BD	Blowing dust	IF	Ice-fog	SG	Snow grains
BN	Blowing sand	IP	Ice pellets	SP	Snow pellets
BS	Blowing snow	IPW	Ice pellet showers	SW	Snow showers
D	Dust	K	Smoke	T	Thunderstorms
F	Fog	L	Drizzle	T+	Severe thunderstorm
GF	Ground fog	R	Rain	ZL	Freezing drizzle
H	Haze	RW	Rain showers	ZR	Freezing rain

Precipitation intensities are indicated thus: — Light; (no sign) Moderate: + Heavy

WIND

Direction in tens of degrees from true north, speed in knots. 0000 indicates calm. G indicates gusty. Peak speed of gusts follows G or Q when gusts or squall are reported. The contraction WSHFT followed by GMT time group in remarks indicates windshift and its time of occurrence. (Knots × 1.15=statute mi/hr.)

EXAMPLES: 3627=360 Degrees, 27 knots;
3627G40=360 Degrees, 27 knots, peak speed in gusts 40 knots.

ALTIMETER SETTING

The first figure of the actual altimeter setting is always omitted from the report.

RUNWAY VISUAL RANGE (RVR)

RVR is reported from some stations. Extreme values during 10 minutes prior to observation are given in hundreds of feet. Runway identification precedes RVR report.

PILOT REPORTS (PIREPS)

When available, PIREPS, in fixed-formats are appended to weather observations. The PIREP is desgnated by UA.

DECODED REPORT

Kansas City: Record observation taken at 0758 GMT 1500 feet scattered clouds, measured ceiling 2500 feet overcast, visibility 1 mile, light rain, smoke, sea-level pressure 1013.2 millibars, temperature 58°F, dewpoint 56°F, wind 180°, 7 knots, altimeter setting 29.93 inches. Runway 04 left, visual range 2000 feet variable to 4000 feet.

*TYPE OF REPORT

SA—a scheduled record observation

SP—an unscheduled special observation indicating a significant change in one or more elements

RS—a scheduled record observation that also qualifies as a special observation.

All three types of observations (SA, SP, RS) are followed by a 24 hour-clock-time-group in GMT.

KEY TO AVIATION WEATHER FORECASTS . . . .

TERMINAL FORECASTS contain information for specific airports on expected ceiling, cloud heights, cloud amounts, visibility, weather, and obstructions to vision and surface wind. They are issued 3 times/day and are valid for 24 hours. The last six hours of each forecast are covered by a categorical statement indicating whether VFR, MVFR, IFR or LIFR conditions are expected (L in LIFR and M in MVFR indicate "low" and "marginal"). Terminal forecasts will be written in the following form:

CEILING: Identified by the letter "C"
CLOUD HEIGHTS: In hundreds of feet above the station (ground)
CLOUD LAYERS: Stated in ascending order of height
VISIBILITY: In statute miles but omitted if over 6 miles
WEATHER AND OBSTRUCTION TO VISION: Standard weather and obstruction to vision symbols are used
SURFACE WIND: In tens of degrees and knots; omitted when less than 10

EXAMPLE OF TERMINAL FORECAST

DCA 221010: DCA Forecast 22nd day of month—valid time 10Z–10Z.

10 SCT C18 BKN 5SW–3415G25 OCNL C8 X 1/2SW: Scattered clouds at 1000 feet, ceiling 1800 feet broken, visibility 5 miles, light snow showers, surface wind 340 degrees 15 knots Gusts to 25 knots, occasional ceiling 8 hundred feet sky obscured, visibility ½ mile in moderate snow showers.

12Z C50 BKN 3312G22: At 12Z becoming ceiling 5000 feet broken, surface wind 330 degrees 12 knots Gusts to 22.

04Z MVFR CIG: Last 6 hours of FT after 04Z marginal VFR due to ceiling.

AREA FORECASTS are 18-hour aviation forecasts plus a 12-hour categorical outlook prepared 2 times/day giving general descriptions of cloud cover, weather and frontal conditions for an area the size of several states. Heights of cloud tops, and icing are referenced ABOVE SEA LEVEL (ASL); ceiling heights, ABOVE GROUND LEVEL (AGL); bases of cloud layers are ASL unless indicated. Each SIGMET or AIRMET affecting an FA area will also serve to amend the Area Forecast.

SIGMET or AIRMET messages broadcast by FAA on NAVAID voice channels warn pilots of potentially hazardous weather, SIGMET concerns severe and extreme conditions of importance to all aircraft, (i.e. icing, turbulence, and duststorms/sandstorms). Convective SIGMETS are issued for thunderstorms by the Severe Storms Forecast Center at Kansas City for the conterminous U.S. AIRMETS concern less severe conditions which may be hazardous to some aircraft or to relatively inexperienced pilots.

WINDS AND TEMPERATURES ALOFT (FD) FORECASTS are 12-hour forecasts of wind direction (nearest 10° true N) and speed (knots) for selected flight levels. Temperatures aloft (°C) are included for all but the 3000-foot level.

EXAMPLES OF WINDS AND TEMPERATURES ALOFT (FD) FORECASTS:

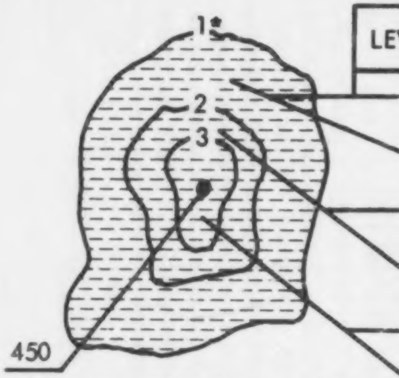
```
    FD WBC 121745
    BASED ON 121200Z DATA
    VALID 130000Z FOR USE 1800-0300Z. TEMPS NEG ABV 24000
  FT
  3000    6000    9000    12000    18000    24000    30000    34000    39000
  BOS
  3127 3425-07 3420-11 3421-16 3516-27 3512-38 311649 292451 283451
  JFK
  3026 3327-08 3324-12 3322-16 3120-27 2923-38 284248 285150 285749
```

At 6000 feet ASL over JFK wind from 330° at 27 knots and temperature minus 8°C.

TWEB (CONTINUOUS TRANSCRIBED WEATHER BROADCAST)—Individual route forecasts covering a 25-nautical-mile zone either side of the route. By requesting a specific route number, detailed en route weather for a 12- or 18-hour period (depending on forecast issuance) plus a synopsis can be obtained.

PILOTS . . . report inflight weather to nearest FSS. The latest surface weather reports are available by phone at the nearest pilot weather briefing office by calling at H+10.

KEY TO RADAR SUMMARY CHART



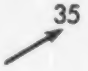
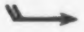
Highest precipitation tops in area in hundreds of feet.

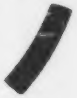
LEVEL	ECHO INTENSITY	PRECIPITATION INTENSITY	POSSIBLE TURBULENCE	WIND GUSTS	HAIL	LIGHTNING
1	WEAK	LIGHT	LGT/MDT			
2	MODERATE	MODERATE	LGT/MDT			
3	STRONG	HEAVY	SEVERE			
4	VERY STRONG	VERY HEAVY	SEVERE	POSSIBLE	POSSIBLE	YES
5	INTENSE	INTENSE	SEVERE	ORGANIZED	LIKELY	YES
6	EXTREME	EXTREME	SEVERE	EXTENSIVE	LARGE	YES

* The numbers representing the intensity level do not appear on the chart. Beginning from the first contour line, bordering the area, the intensity level is 1-2; second contour is 3-4; and third contour is 5-6.

SYMBOLS USED ON CHART

SYMBOL	MEANING
R	RAIN
RW	RAIN SHOWERS
A	HAIL
S	SNOW
IP	ICE PELLETS
SW	SNOW SHOWERS
L	DRIZZLE
T	THUNDERSTORM
ZR, ZL	FREEZING PRECIPITATION
NE	NO ECHOES OBSERVED
NA	OBSERVATIONS UNAVAILABLE
OM	OUT FOR MAINTENANCE
STC	STC ON -- all precipitation may not be seen

SYMBOL	MEANING
+	INTENSITY INCREASING OR NEW ECHO
-	INTENSITY DECREASING
NO SYMBOL	NO CHANGE
 35	CELL MOVEMENT TO NE AT 35 KNOTS
	LINE OR AREA MOVEMENT TO EAST AT 20 KNOTS
MA	ECHOES MOSTLY ALOFT
PA	ECHOES PARTLY ALOFT

SYMBOL	MEANING
	LINE OF ECHOES
SLD	OVER 9/10 COVERAGE IN A LINE
WS999	THUNDERSTORM WATCH
WT999	TORNADO WATCH
LEWP	LINE ECHO WAVE PATTERN

EXCERPT FROM FAR PART 25

(a) The engines at the power or thrust that is available eight seconds after initiation of movement of the power or thrust controls from the minimum flight idle to the takeoff position: and

(b) A climb speed of not more than 1.3 V_S.

§ 25.121 Climb: one-engine-inoperative.

(a) *Takeoff; landing gear extended.* In the critical takeoff configuration existing along the flight path (between the points at which the airplane reaches V_{LOF} and at which the landing gear is fully retracted) and in the configuration used in § 25.111 but without ground effect, the steady gradient of climb must be positive for two-engine airplanes, and not less than 0.3 percent for three-engine airplanes or 0.5 percent for four-engine airplanes, at V_{LOF} and with—

(1) The critical engine inoperative and the remaining engines at the power or thrust available when retraction of the landing gear is begun in accordance with § 25.111 unless there is a more critical power operating condition existing later along the flight path but before the point at which the landing gear is fully retracted; and

(2) The weight equal to the weight existing when retraction of the landing gear is begun, determined under § 25.77.

(b) *Takeoff; landing gear retracted.* In the takeoff configuration existing at the point of the flight path at which the landing gear is fully retracted, and in the configuration used in § 25.111 but without ground effect, the steady gradient of climb may not be less than 2.4 percent for two-engine airplanes, 2.7 percent for three-engine airplanes, and 3.0 percent for four-engine airplanes, at V_2 and with—

(1) The critical engine inoperative, the remaining engines at the takeoff power or thrust available at the time the landing gear is fully retracted, determined under § 25.111, unless there is a more critical power operating condition existing later along the flight path but before the point where the airplane reaches a height of 400 feet above the takeoff surface; and

(2) The weight equal to the weight existing when the airplane's landing gear is fully retracted, determined under § 25.111.

(c) *Final takeoff.* In the en route configuration at the end of the takeoff path determined in accordance with § 25.111, the steady gradient of climb may not be less than 1.2 percent for two-engine airplanes, 1.5 percent for three-engine airplanes, and 1.7 percent for four-engine airplanes, at not less than 1.25 V_S and with—

(1) The critical engine inoperative and the remaining engines at the available maximum continuous power or thrust; and

(2) The weight equal to the weight existing at the end of the takeoff path, determined under § 25.111.

(d) *Approach.* In the approach configuration corresponding to the normal all-engines-operating procedure in which V_S for this configuration does not exceed 110 percent of the V_S for the related landing configuration, the steady gradient of climb may not be less than 2.1 percent for two-engine airplanes, 2.4 percent for three-engine airplanes, and 2.7 percent for four-engine airplanes, with—

(1) The critical engine inoperative, the remaining engines at the available takeoff power or thrust;

(2) The maximum landing weight; and

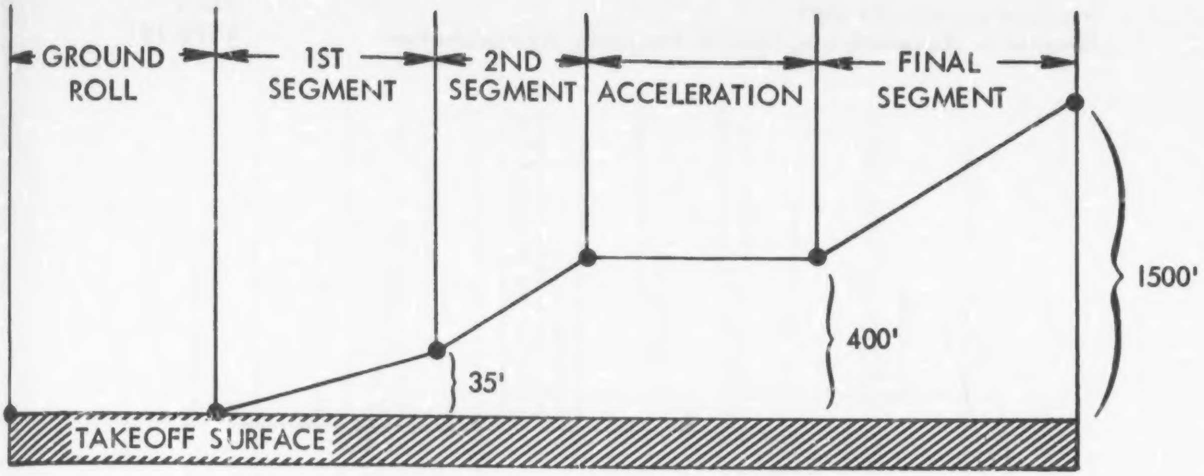
(3) A climb speed established in connection with normal landing procedures, but not exceeding 1.5 V_S.

§ 25.123 En route flight paths.

(a) For the en route configuration, the flight paths prescribed in paragraphs (b) and (c) of this section must be determined at each weight, altitude, and ambient temperature, within the operating limits established for the airplane. The variation of weight along the flight path, accounting for the progressive consumption of fuel and oil by the operating engines, may be included in the computation. The flight paths must be determined at any selected speed, with—

(1) The most unfavorable center of gravity;

TAKEOFF CLIMB SEGMENTS - FAR PART 25 AIRPLANE


GROUND ROLL
1ST SEGMENT
2ND SEGMENT
ACCELERATION
FINAL SEGMENT
35'
400'
1500'
TAKEOFF SURFACE

		1ST SEGMENT	2ND SEGMENT	ACCELERATION	FINAL SEGMENT
CLIMB GRADIENT	2 ENG.	POSITIVE	2.4%	POSITIVE	1.2%
	3 ENG.	0.3%	2.7%	POSITIVE	1.5%
	4 ENG.	0.5%	3.0%	POSITIVE	1.7%
FLAPS		TAKEOFF			UP
GEAR		DOWN	UP		
CRITICAL ENG.		INOPERATIVE			
POWER		TAKEOFF			MAX. CONT.
AIRSPEED		$V_{LOF} \rightarrow V_2$	V_2	$V_2 \rightarrow 1.25V_s$	$1.25V_s$

APPROACH CLIMB - FAR PART 25 AIRPLANE

	2 ENG	3 ENG	4 ENG
CLIMB GRADIENT	2.1%	2.4%	2.7%
CONFIGURATION	APPROACH		
CRITICAL ENG.	INOPERATIVE		
WEIGHT	MAXIMUM LANDING		
AIRSPEED	NOT TO EXCEED $1.5V_s$		

EXCERPT FROM CFR 49 PART 172

§172.101 Hazardous Materials Table

(1)	(2)	(3)	(4)	(5) Packaging		(6) Maximum net quantity in one package		(7) Water shipments		
*/ W/ A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not excepted)	(a) Exceptions	(b) Specific requirements	(a) Passenger carrying aircraft or railcar	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Accumulator, pressurized (*pneumatic or hydraulic*), *containing nonflammable gas*	Nonflammable gas	Nonflammable gas	173.306		No limit	No limit	1,2	1,2	
	Acetal	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Acetaldehyde (*ethyl aldehyde*)	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
A	Acetaldehyde ammonia	ORM-A	None	173.505	173.510	No limit	No limit			
*	Acetic acid (*aqueous solution*)	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	Stow separate from nitric acid or oxidizing materials
	Acetic acid, glacial	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	Stow separate from nitric acid or oxidizing materials. Segregation same as for flammable liquids
	Acetic anhydride	Corrosive material	Corrosive	173.244	173.245	1 quart	1 gallon	1,2	1,2	
	Acetone	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Acetone cyanohydrin	Poison B	Poison	None	173.346	Forbidden	55 gallons	1	5	Shade from radiant heat. Stow away from corrosive materials
	Acetone oil	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Acetonitrile	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1	4	Shade from radiant heat
	Acetyl benzoyl peroxide, solid	Forbidden								
	Acetyl benzoyl peroxide solution, *not over 40% peroxide*	Organic peroxide	Organic peroxide	None	173.222	Forbidden	1 quart	1,2	1	
	Acetyl bromide	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels

EXCERPT FROM CFR 49 PART 172

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5) Packaging		(6) Maximum net quantity in one package		(7) Water shipments		
*/ W/ A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not excepted)	(a) Exceptions	(b) Specific requirements	(a) Passenger carrying aircraft or railcar	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Acetyl chloride	Flammable liquid	Flammable liquid	173.244	173.247	1 quart	1 gallon	1	1	Stow away from alcohols. Keep cool and dry. Separate longitudinally by an intervening complete compartment or hold from explosives
	Acetylene	Flammable gas	Flammable gas	None	173.303	Forbidden	300 pounds	1	1	Shade from radiant heat
A	Acetylene tetrabromide	ORM-A	None	173.505	173.510	10 gallons	55 gallons			
	Acetyl iodide	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Acetyl peroxide solution, *not over 25% peroxide*	Organic peroxide	Organic peroxide	173.153	173.222	Forbidden	1 quart	1,2	1	
	Acid butyl phosphate	Corrosive material	Corrosive	173.244	173.245	1 quart	5 gallons	1,2	1,2	Glass carboys in hampers not permitted under deck
	Acid carboy empty. *See* Carboy, empty									
•	Acid, liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.245	1 quart	5 pints	1	4	Keep cool
•	Acid, sludge	Corrosive material	Corrosive	None	173.248	Forbidden	1 quart	1,2	1	
	Acrolein, inhibited	Flammable liquid	Flammable liquid and Poison	None	173.122	Forbidden	1 quart	1,2	5	Keep cool. Stow away from living quarters
	Acrylic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	5 pints	1	1	
	Acrylonitrile	Flammable liquid	Flammable liquid and Poison	None	173.119	Forbidden	1 quart	1,2	5	Keep cool

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	Actuating cartridge, explosive (*fire extinguisher, or valve*)	Class C explosive	Explosive C	173.114		50 pounds	150 pounds	1,2	1,2	Keep cool and dry
•	Adhesive, n.o.s. *See* Cement, liquid, n.o.s.									
	Aerosol product, each aerosol container exceeding 50 cubic inches capacity. See Compressed gas, n.o.s.									
•	Air, compressed	Nonflammable gas	Nonflammable gas	173.306	173.302	150 pounds	300 pounds	1,2	1,2	
	Aircraft rocket engine (*Commercial*)	Flammable solid	Flammable solid	None	173.238	Forbidden	550 pounds	1,3	5	
	Aircraft rocket engine igniter (*Commercial*)	Flammable solid	Flammable solid	None	173.238	Forbidden	25 pounds	1,3	5	
	Airplane flare. See Fireworks, special									
•	Alcohol, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.125	1 quart	10 gallons	1,2	1	
•	Alcohol, n.o.s.	Combustible liquid	None	173.118a	None	No limit	No limit	1,2	1,2	
	Aldrin	Poison B	Poison	173.364	173.376	50 pounds	200 pounds	1,2	1,2	
A	Aldrin, cast solid	ORM-A	None	173.505	173.510	No limit	No limit			
	Aldrin mixture, dry (*with more than 65% aldrin*)	Poison B	Poison	173.364	173.376	50 pounds	200 pounds	1,2	1,2	
A	Aldrin mixture, dry, with 65% or less aldrin	ORM-A	None	173.505	173.510	No limit	No limit			
	Aldrin mixture, liquid (*with more than 60% aldrin*)	Poison B	Poison	173.345	173.361	1 quart	55 gallons	1,2	1,2	If flash point less than 141 DEG F segregation same as for flammable liquids
A	Aldrin mixture, liquid, with 60% or less aldrin	ORM-A	None	173.505	173.510	No limit	No limit			
	Alkaline corrosive battery fluid	Corrosive material	Corrosive	173.244	173.249 173.257	1 quart	5 gallons	1,2	1,2	
	Alkaline corrosive battery fluid with empty storage battery	Corrosive material	Corrosive	None	173.258	Forbidden	5 pints	1,2	1,2	
•	Alkaline corrosive liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
•	Alkaline liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
•	Alkanesulfonic acid	Corrosive material	Corrosive	173.244	173.245	5 pints	1 gallon	1,2	1	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)		(6)		(7)		
				Packaging		Maximum net quantity in one package		Water shipments		
*/ W/ A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not excepted)	(a) Exceptions	(b) Specific requirements	(a) Passenger carrying aircraft or railcar	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Alkyl aluminum halides. *See* Pyrophoric liquid, n.o.s.									
A	Allethrin	ORM-A	None	173.505	173.510	No limit	No limit			
	Allyl alcohol	Flammable liquid	Flammable liquid and Poison	173.118	173.119	1 quart	10 gallons	1,2	1	
	Allyl bromide	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	10 gallons	1,2	1	
	Allyl chloride	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
	Allyl chlorocarbonate	Flammable liquid	Flammable liquid	None	173.288	Forbidden	5 pints	1	5	Keep dry. Separate longitudinally by an intervening complete hold or compartment from explosives. Segregation same as for corrosive materials
	Allyl chloroformate. *See* Allyl chlorocarbonate									
	Allyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Aluminum alkyls. *See* Pyrophoric liquid, n.o.s.									
	Aluminum bromide, anhydrous	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
	Aluminum dross, wet *or* hot. *See* Sec. 173.173									
	Aluminum hydride	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solid labeled Dangerous When Wet

EXCERPT FROM CFR 49 PART 175

~~braces or blocking used for staying the carboy boxes must be covered with at least 1 inch thickness of clean and dry sand or earth, not sawdust or other combustible material.~~

~~(c) A carrier may not accept any carboy previously used for the shipment of corrosive liquids for transportation as an empty carboy unless it has been thoroughly and completely drained. The carrier must handle them with the necks up.~~

~~**§ 174.810 Special handling requirements for wet electric storage batteries.**~~

~~(a) Electric storage batteries (wet) for shipment by rail must be completely protected so that short circuits will be prevented and may not be loaded or stored with explosives.~~

~~(b) Wet electric storage batteries and electrolyte must be packed as required by § 173.258 of this subchapter for transportation by rail and must be blocked and braced in the rail car so they cannot change position during transportation due to shocks normally incident to transportation. They must be loaded so that other freight cannot fall onto or slide against them. They may be transported in a gondola car or on a flatcar. However, they may not be transported in a hopper bottom car.~~

~~(c) Wet electric storage batteries are not authorized in refrigerator or "plug-door" type cars unless the cars are provided with vents which will prevent an accumulation of gas within the car.~~

~~[Amdt. 174-26, 41 FR 16092, Apr. 5, 1976, as amended by Amdt. 174-26A, 41 FR 40686, Sept. 20, 1976; Amdt. 174-26B, 41 FR 57072, Dec. 30, 1976]~~

~~**§ 174.812 Special handling requirements for nitric acid.**~~

~~(a) Carboys of nitric acid may not be transported in a boxcar or in a truck body or trailer on a flatcar more than two tiers high except that completely boxed carboys, DOT-1D, may be loaded three tiers high.~~

~~(b) Nitric acid, being transported by rail, with other corrosive liquids in carboys, must be separated from the other carboys. A 2 × 6 inch plank, set on edge, must be nailed across the car floor at least 12 inches from the nitric acid carboys and the space between the plank and the carboys of nitric acid must be filled with sand, sifted ashes, or other noncombustible absorbent material.~~

~~[Amdt. 174-26, 41 FR 16092, Apr. 5, 1976, as amended by Amdt. 174-26A, 41 FR 40686, Sept. 20, 1976]~~

~~Subpart M—Detailed Requirements for Other Regulated Materials~~

~~**§ 174.840 Special loading and handling requirements for asbestos.**~~

~~Asbestos must be loaded, handled, and unloaded, and any asbestos contamination of rail cars removed, in a manner that will minimize occupational exposure to airborne asbestos particles released incident to transportation. (See § 173.1090 of this subchapter.)~~

~~[Amdt. 174-30, 43 FR 56668, Dec. 4, 1978]~~

PART 175—CARRIAGE BY AIRCRAFT

Subpart A—General Information and Regulations

Sec.

175.1 Purpose and scope.
175.3 Unacceptable hazardous materials shipments.
175.5 Applicability.
175.10 Exceptions.
175.20 Compliance.
175.30 Accepting shipments.
175.33 Notification of pilot-in-command.
175.35 Shipping papers aboard aircraft.
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175.45 Reporting hazardous materials incidents.

Subpart B—Loading, Unloading and Handling

175.75 Quantity limitations aboard aircraft.
175.78 Stowage compatibility of cargo.
175.79 Orientation of cargo.
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175.90 Damaged shipments.

Subpart C—Specific Regulations Applicable According to Classification of Material

175.305 Self-propelled vehicles.
175.310 Transportation of flammable liquid fuel in small, passenger-carrying aircraft.
175.320 Cargo-only aircraft; only means of transportation.
175.630 Special requirements for poisons.

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Sec.
175.640 Special requirements for other regulated materials.
175.700 Special requirements for radioactive materials.
175.710 Special requirements for fissile Class III radioactive materials.

AUTHORITY: 49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e), unless otherwise noted.

SOURCE: Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, unless otherwise noted.

NOTE: Nomenclature changes to Part 175 appear at 43 FR 48645, Oct. 19, 1978 (Amdt. 175-6).

Subpart A—General Information and Regulations

§ 175.1 Purpose and scope.

This part prescribes requirements, in addition to those contained in Parts 171, 172 and 173 of this subchapter, to be observed by aircraft operators with respect to the transportation of hazardous materials aboard (including attached to or suspended from) civil aircraft.

§ 175.3 Unacceptable hazardous materials shipments.

A shipment of hazardous materials that is not prepared for shipment in accordance with Parts 172 and 173 of this subchapter may not be accepted for transportation or transported aboard an aircraft.

§ 175.5 Applicability.

This part contains regulations pertaining to the acceptance of hazardous materials for transportation, and the loading and transportation of hazardous materials, in any civil aircraft in the United States and in civil aircraft of United States registry anywhere in air commerce, except aircraft of United States registry under lease to and operated solely by foreign nationals outside the United States.

§ 175.10 Exceptions.

(a) This subchapter does not apply to—

(1) Aviation fuel and oil in tanks that are in compliance with the installation provisions of 14 CFR, Chapter 1.

(2) Aircraft parts, equipment, and supplies (other than fuel) carried by an aircraft operator if authorized or required aboard his aircraft for their operation including:

(i) Fire extinguishers;

(ii) Cylinders containing compressed gases;

(iii) Aerosol dispensers;

(iv) Distilled spirits;

(v) Hydraulic accumulators;

(vi) Non-spillable batteries;

(vii) First-aid kits;

(viii) Signaling devices;

(ix) Tires; and

(x) Items of replacement therefor, except that batteries, aerosol dispensers, and signaling devices must be packed in strong outside containers, and tires must be deflated to a pressure not greater than 100 p.s.i.g.

(3) Hazardous materials loaded and carried in hoppers or tanks of aircraft certificated for use in aerial seeding, dusting, spraying, fertilizing, crop improvement, or pest control, to be dispensed during such an operation.

(4) Medicinal and toilet articles carried by a crewmember or passenger in his baggage (including carry-on baggage) when:

(i) The total capacity of all the containers used by a crewmember or passenger does not exceed 75 ounces (net weight ounces and fluid ounces);

(ii) The capacity of each container other than an aerosol container does not exceed 16 fluid ounces or 1 pound of material.

(5) Small-arms ammunition for personal use carried by a crewmember or passenger in his baggage (excluding carry-on baggage) if securely packed in fiber, wood, or metal boxes.

(6) Prior to May 3, 1981, radioactive materials which meet the requirements of § 173.391(a), (b), or (c) of this subchapter in effect on May 3, 1979.

(7) Oxygen, or any hazardous material used for the generation of oxygen, carried for medical use by a passenger in accordance with 14 CFR 121.574 or 135.114.

(8) Human beings and animals with an implanted medical device, such as a heart pacemaker, that contains radioactive material or with radio-pharmaceuticals that have been injected or ingested.

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(9) Smoke grenades, flares, or similar devices carried only for use during a sport parachute jumping activity.

(10) Personal smoking materials intended for use by any individual when carried on his person except lighters with flammable liquid reservoirs and containers containing lighter fluid for use in refilling lighters.

(11) Smoke grenades, flares, and pyrotechnic devices affixed to aircraft carrying no person other than a required flight crewmember during any flight conducted at and as a part of a scheduled air show or exhibition of aeronautical skill. The affixed installation accommodating the smoke grenades, flares, or pyrotechnic devices on the aircraft must be approved by the FAA for its intended use.

(12) Hazardous materials which are loaded and carried on or in cargo-only aircraft and which are to be dispensed or expended during flight for weather control, forest preservation and protection, or avalanche control purposes when the following requirements are met:

(i) Operations may not be conducted over densely populated areas, in a congested airway, or near any airport where air carrier passenger operations are conducted.

(ii) Each operator shall prepare and keep current a manual containing operational guidelines and handling procedures, for the use and guidance of flight, maintenance, and ground personnel concerned in the dispensing or expending of hazardous materials. The manual must be approved by the FAA District Office having jurisdiction over the operator's certificate, if any, or the FAA Regional Office in the region where the operator is located. Each operation must be conducted in accordance with the manual.

(iii) No person other than a required flight crewmember, FAA inspector, or person necessary for handling or dispensing the hazardous material may be carried on the aircraft.

(iv) The operator of the aircraft must have advance permission from the owner of any airport to be used for the dispensing or expending operation.

(v) When dynamite and blasting caps are carried for avalanche control flights, the explosives must be handled, and, at all times be, under the control of a blaster who is licensed under a state or local authority identified in writing to the FAA district office having jurisdiction over the operator's certificate, if any, or the FAA regional office in the region where the operator is located.

(49 U.S.C. 1803, 1804, 1806, 1808; 49 CFR 1.53 and App. A to Part 1)

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976]

NOTE: For amendments to § 175.10 see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 175.20 Compliance.

Unless the regulations in this subchapter specifically provide that another person must perform a duty, each operator shall comply with all the regulations in Parts 102, 171, 172, and 175 of this subchapter and shall thoroughly instruct his employees in relation thereto. (See 14 CFR 121.135, 121.401, 121.433a, 135.27 and 135.140.)

§ 175.30 Accepting shipments.

(a) No person may accept a hazardous material for transportation aboard an aircraft unless the hazardous material is—

(1) Authorized, and is within the quantity limitations specified for carriage aboard aircraft according to § 172.101 of this subchapter;

(2) Described and certified on a shipping paper prepared in duplicate in accordance with Subpart C of Part 172 of this subchapter. The originating aircraft operator must retain one copy of each shipping paper for 90 days;

(3) Labeled and marked, or placarded (when required), in accordance with Subparts D, E and F of Part 172 of this subchapter; and

(4) Labeled with a "CARGO AIRCRAFT ONLY" label (see § 172.448 of this subchapter) if the material as presented is not permitted aboard passenger-carrying aircraft.

(b) Except as provided in paragraph (c) of this section, no person may carry any hazardous material aboard an aircraft unless, prior to placing the material aboard the aircraft, the operator of the aircraft has inspected the package, or the outside container pre-

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pared in accordance with § 173.25 of this subchapter which contains the material, and has determined that—it has no holes, leakage, or other indication that its integrity has been compromised, and for radioactive materials that the package seal has not been broken.

(c) The requirements of paragraph (b) of this section do not apply to ORM-D materials packed in a freight container and offered for transportation by one consignor.

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976; Amdt. 175-1B, 41 FR 57072, Dec. 30, 1976]

§ 175.33 Notification of pilot-in-command.

When materials subject to the provisions of this subchapter are carried in an aircraft, the operator of the aircraft shall give the pilot-in-command the following information in writing before takeoff:

(a) The information required by §§ 172-202 and 172.203 of this subchapter;

(b) The location of the hazardous material in the aircraft; and

(c) The results of the inspection required by § 175.30(b).

[Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976]

§ 175.35 Shipping papers aboard aircraft.

(a) A copy of the shipping papers required by § 175.30(a)(2) must accompany the shipment it covers during transportation aboard an aircraft.

(b) The documents required by paragraph (a) of this section and § 175.33 may be combined into one document if it is given to the pilot-in-command before departure of the aircraft.

§ 175.40 Keeping and replacement of labels.

(a) Aircraft operators who engage in the transportation of hazardous materials must keep an adequate supply of the labels specified in Subpart E of Part 172 of this subchapter, on hand at each location where shipments are loaded aboard aircraft.

(b) Lost or detached labels for packages of hazardous materials must be replaced in accordance with the information provided on the shipping papers.

§ 175.45 Reporting hazardous materials incidents.

(a) Each operator that transports hazardous materials shall report to the nearest Air Carrier District Office (ACDO), Flight Standards District Office (FSDO), General Aviation District Office (GADO) or other FAA facility, except that in place of reporting to the nearest of those facilities a certificate holder under 14 CFR Part 121, 127, or 135 may report to the FAA District Office holding the carrier's operating certificate and charged with overall inspection of its operations, by telephone at the earliest practicable moment after each incident that occurs during the course of transportation (including loading, unloading or temporary storage) in which as a direct result of any hazardous material—

(1) A person is killed;

(2) A person receives injuries requiring his or her hospitalization;

(3) Estimated carrier or other property damage, or both, exceeds $50,000;

(4) Fire, breakage, or spillage or suspected radioactive contamination occurs involving shipment of radioactive materials (see § 175.700(b));

(5) Fire, breakage, spillage, or suspected contamination occurs involving shipment of etiologic agents. In addition to the report required by paragraph (a) of this section, a report on an incident involving etiologic agents should be telephoned directly to the Director, Center for Disease Control, U.S. Public Health, Atlanta, Georgia, area code 404-633-5313; or

(6) A situation exists of such a nature that, in the judgment of the carrier, it should be reported to the Department even though it does not meet the criteria of paragraph (b)(1), (2), or (3) of this section, e.g., a continuing danger to life exists at the scene of the incident.

(7) If the operator conforms to the provisions of this section, the carrier requirements of § 171.15 except § 171.15(c) of this subchapter shall be deemed to have been satisfied.

(b) The following information shall be furnished in each report:

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(1) Name of reporting person;

(2) Name and address of carrier represented by reporter;

(3) Phone number where reporter can be contacted;

(4) Date, time, and location of incident;

(5) The extent of the injuries, if any; and

(6) Classification, name and quantity of hazardous material involvement and whether a continuing danger to life exists at the scene.

(c) Each operator who transports hazardous materials shall report in writing, in duplicate, on DOT Form F 5800.1 within 15 days of the date of discovery, each incident that occurs during the course of transportation (including loading, unloading, or temporary storage) in which, as a direct result to hazardous materials, any of the circumstances set forth in paragraph (a) of this section occurs or there has been an unintentional release of hazardous materials from a package. Each operator making a report under this section shall send that report to the Materials Transportation Bureau, Office of Hazardous Materials Regulation, Department of Transportation, Washington, D.C. 20590, with a separate copy to the FAA facility indicated in paragraph (a) of this section.

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976]

Subpart B—Loading, Unloading and Handling

§ 175.75 Quantity limitations aboard aircraft.

(a) Except as provided in § 175.85(b), no person may carry on an aircraft—

(1) A hazardous material except as permitted in Part 172 of this subchapter;

(2) More than 50 pounds net weight of hazardous material (and in addition thereto, 150 pounds net weight of nonflammable compressed gas) permitted to be carried aboard passenger-carrying aircraft—

(i) In an inaccessible cargo compartment,

(ii) In any freight container within an accessible cargo compartment, or

(iii) In any accessible cargo compartment in a cargo-only aircraft in a manner that makes it inaccessible unless in a freight container;

(3) Packages containing radioactive materials when their combined transport indices exceed 50.

(b) No limitation applies to the number of packages of ORM material aboard an aircraft.

[Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976]

§ 175.78 Stowage compatibility of cargo.

(a) No person may stow a package of a corrosive material on an aircraft next to or in a position that will allow contact with a package of flammable solids, oxidizing materials, or organic peroxides.

(b) No person may stow a package labeled BLASTING AGENT on an aircraft next to, or in a position that will allow contact with a package of special fireworks or railway torpedoes.

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-8, 44 FR 31184, May 31, 1979]

§ 175.79 Orientation of cargo.

(a) A package containing hazardous materials marked "THIS SIDE UP", "THIS END UP", or with arrows to indicate the proper orientation of the package, must be stored, loaded abroad an aircraft in accordance with such markings, and secured in a manner that will prevent any movement which would change the orientation of the package.

(b) A package containing liquid hazardous materials not marked as indicated in paragraph (a) of this section must be stored and loaded with closures up.

§ 175.85 Cargo location.

(a) No person may carry a hazardous material subject to the requirements of this subchapter in the cabin of a passenger-carrying aircraft.

(b) Each person carrying materials acceptable only for cargo-only aircraft shall carry those materials in a location accessible to a crewmember during flight. However, when materials acceptable for cargo-only or pas-

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senger carrying aircraft are carried on a small, single pilot, cargo-only aircraft being used where other means of transportation are impracticable or not available, they may be carried without quantity limitation as specified in § 175.75 in a location that is not accessible to the pilot subject to the following conditions.

(1) No person other than the pilot, an FAA inspector, the shipper or consignee of the material or a representative of the shipper or consignee so designated in writing, or a person necessary for handling the material may be carried on the aircraft.

(2) The pilot must be provided with written instructions on characteristics and proper handling of the material.

(3) Whenever a change of pilots occurs while the material is on board, the new pilot must be briefed under a hand-to-hand signature service provided by the operator of the aircraft.

(c) No person may load magnetized material (which might cause an erroneous magnetic compass reading) on an aircraft, in the vicinity of a magnetic compass, or compass master unit, that is a part of the instrument equipment of the aircraft, in a manner that affects its operation. If this requirement cannot be met, a special aircraft swing and compass calibration may be made. No person loading magnetized materials may obscure the warning labels.

(d) No person may carry materials subject to the requirements of this subchapter in an aircraft unless they are suitably safeguarded to prevent their becoming a hazard by shifting. For packages bearing "RADIOACTIVE YELLOW-II" or "RADIOACTIVE YELLOW-III" labels, such safeguarding must prevent movement that would permit the package to be closer to a space that is occupied by a person or an animal than is permitted by § 175.700.

(e) No person may carry a material subject to the requirements of this subchapter that is acceptable for carriage in a passenger-carrying aircraft (other than magnetized materials) unless it is located in the aircraft in a place that is inaccessible to persons other than crew-members.

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976]

§ 175.90 Damaged shipments.

Except as provided for in § 175.700, the operator of an aircraft shall remove from the aircraft any package subject to this subchapter that appears to be damaged or leaking. No person shall place or transport a package that is damaged or appears to be damaged or leaking aboard an aircraft subject to this Part.

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976]

Subpart C—Specific Regulations Applicable According to Classification of Material

§ 175.305 Self-propelled vehicles.

(a) Self-propelled vehicles are exempt from the drainage requirements of § 173.120 of this subchapter when carried in aircraft designed or modified for vehicle ferry operations and when all of the following conditions are met:

(1) Authorization for this type operation has been given by the appropriate authority in the government of the country in which the aircraft is registered;

(2) Each vehicle is secured in an upright position;

(3) Each fuel tank is filled in a manner and only to a degree that will preclude spillage of fuel during loading, unloading, and transportation; and

(4) Ventilation rates to be maintained in the vehicle storage compartment have been approved by the appropriate authority in the government of the country in which the aircraft is registered.

§ 175.310 Transportation of flammable liquid fuel in small, passenger-carrying aircraft.

A small aircraft or helicopter operated entirely within the State of Alaska or into a remote area elsewhere in the United States may carry, in other than scheduled passenger operations, not more than 20 gallons of flammable liquid fuel, if—

best copy available

EXCERPT FROM CFR 49 PART 175

(a) Transportation by air is the only practical means of providing suitable fuel;

(b) The flight is necessary to meet the needs of a passenger;

(c) The fuel is carried in metal containers that are either—

(1) DOT Specification 2A containers of not more than 5 gallons capacity, each packed inside a DOT Specification 12B fiberboard box or each packed inside a DOT Specification 15A, 15B, 15C, 16A, 19A or 19B wooden box, or in the case of a small aircraft in Alaska, each packed inside a wooden box of at least one-half inch thickness;

(2) Airtight, leakproof, inside containers of not more than 10 gallons capacity and of at least 28-gauge metal, each packed inside a DOT Specification 15A, 15B, 15C, 16A, 19A, or 19B wooden box or, in the case of a small aircraft in Alaska, each packed inside a wooden box of at least one-half inch thickness;

(3) DOT Specification 17E containers of not more than 5 gallons capacity; or

(4) Fuel tanks attached to flammable liquid fuel powered equipment under the following conditions:

(i) Each piece of equipment is secured in an upright position;

(ii) Each fuel tank is filled in a manner that will preclude spillage of fuel during loading, unloading, and transportation; and

(iii) Ventilation rates which are maintained in the compartment in which the equipment is carried have been approved by the FAA district office responsible for inspection and surveillance of the aircraft on which the equipment is carried.

(d) In the case of a helicopter, the fuel is carried on external cargo racks;

(e) The area or compartment in which the fuel is loaded is ventilated so as to prevent the accumulation of fumes;

(f) Before each flight, the pilot-in-command—

(1) Informs each passenger of the location of the fuel and the hazards involved; and

(2) Prohibits smoking, lighting matches, the carrying of any lighted cigar, pipe, cigarette or flame, and the use of anything that might cause an open flame or spark, while loading or unloading or in flight; and

(g) Fuel is transferred to the fuel tanks only while the aircraft is on the surface.

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976]

§ 175.320 Cargo-only aircraft; only means of transportation.

(a) Notwithstanding § 172.101, when means of transportation other than air are impracticable or not available, hazardous materials listed in the following table may be carried on a cargo-only aircraft subject to the conditions stated in the table and in paragraph (b) of this section and, when appropriate, paragraph (c) of this section:

Material description	Class	Conditions
Electric blasting caps (more than 1,000).	Class A explosives	Permitted only when no other cargo is aboard the aircraft. However, if the electric blasting caps are packed in an IME 22 container (see 49 CFR 171.7(d)(9)), they may be transported in the same aircraft with materials that are not classed as hazardous materials.
Electric blasting caps (1,000 or less).	Class C explosives	Permitted only when no other cargo is aboard the aircraft. However, if the electric blasting caps are packed in a DOT MC 201 container (49 CFR 178.318) or an IME 22 container (see 49 CFR 171.7(d)(9)), they may be transported in the same aircraft with materials other than class A or class B explosives.
Gasoline	Flammable liquid	Permitted in metal drums having rated capacities of 55 gal. or less. May not be transported in the same aircraft with materials classed as class A, B, or C explosives, blasting agents, corrosive materials or oxidizing materials. Permitted in installed tanks each having a capacity of more than 110 gal. Subject to the conditions specified in para. (c) of this section.

EXCERPT FROM CFR 49 PART 175

Material description	Class	Conditions
High explosives	Class A explosives	Limited to explosives to be used for blasting. Permitted only when no other cargo is aboard the aircraft or when being transported in the same aircraft with an authorized shipment of any 1 or more of the following materials to be used for blasting: Ammonium nitrate-fuel oil mixtures Blasting agent, n.o.s. Cordeau detonant fuse. Propellant explosive (solid) class B (water gels only). Propellant explosive (liquid) class B (water gels only).
Oil n.o.s.; petroleum oil or petroleum oil, n.o.s.	Flammable liquid	Permitted in metal drums having rated capacities of 55 gal. or less. May not be transported in the same aircraft with materials classed as class A, B, or C explosives, blasting agents, corrosive materials, or oxidizing materials. Permitted in installed tanks each having a capacity of more than 110 gal. subject to the conditions specified in para. (c) of this section.
Combustible liquid, n.o.s	Combustible liquid	Permitted in installed tanks each having a capacity of more than 110 gal subject to the conditions specified in par. (c) of this section.

(b) The following conditions apply to the carriage of hazardous materials performed under the authority of this section:

(1) No person other than a required flight crewmember, an FAA inspector, the shipper or consignee of the material or a representative of the shipper or consignee so designated in writing, or a person necessary for handling the material may be carried on the aircraft.

(2) The operator of the aircraft must have advance permission from the owner or operator of each manned airport where the material is to be loaded or unloaded or where the aircraft is to land while the material is on board. When the destination is changed after departure because of weather or other unforeseen circumstances, permission from the owner or operator of the alternate airport should be obtained as soon as practicable before landing.

(3) At any airport where the airport owner or operator or authorized representative thereof has designated a location for loading or unloading the material concerned, the material may not be loaded or unloaded at any other location.

(4) If the material concerned can create destructive forces or have lethal or injurious effects over an appreciable area as a result of an accident involving the aircraft or the material, the loading and unloading of the aircraft and its operation in takeoff, en route, and in landing must be conducted at a safe distance from heavily populated areas and from any place of human abode or assembly.

(5) If the aircraft is being operated by a holder of a certificate issued under 14 CFR Part 121, Part 127, or Part 135, operations must be conducted in accordance with conditions and limitations specified in the certificate holder's operations specifications or operations manual accepted by the FAA. If the aircraft is being operated under 14 CFR Part 91, operations must be conducted in accordance with an operations plan accepted and acknowledged in writing by the operator's FAA District Office.

(6) Each pilot of the aircraft must be provided written instructions stating the conditions and limitations of the operation being conducted and the name of the airport official[s] granting the advance permission required by the first sentence of paragraph (b)(2) of this section.

(7) The aircraft and the loading arrangement to be used must be approved for safe carriage of the particular materials concerned by the FAA District Office holding the operator's certificate and charged with overall inspection of its operations, or the appropriate FAA District Office serving the place where the material is to be loaded.

(8) When Class A explosives are carried under the authority of this section, the operator of the aircraft shall obtain route approval from the FAA inspector in the operator's FAA District Office.

(9) During loading and unloading, no person may smoke, carry a lighted cigarette, cigar, or pipe, or operate any device capable of causing an open flame or spark within 50 feet of the aircraft.

(c) The following additional conditions apply to the carriage of flammable liquids and combustible liquids in tanks each having a capacity of more than 110 gallons under the authority of this section:

(1) The tanks and their associated piping and equipment and the installation thereof must have been approved for the material to be transported by the appropriate FAA Regional Office.

(2) In the case of an aircraft being operated by a certificate holder, the operator shall list the aircraft and the approval information in its operating specifications. If the aircraft is being operated by other than a certificate holder, a copy of the FAA Regional Office approval required by this section must be carried on the aircraft.

(3) The crew of the aircraft must be thoroughly briefed on the operation of the particular bulk tank system being used.

(4) During loading and unloading and thereafter until any remaining fumes within the aircraft are dissipated:

(i) Only those electrically operated bulk tank shutoff valves that have been approved under a supplemental type certificate may be electrically operated.

(ii) No engine or electrical equipment, avionic equipment, or auxiliary power units may be operated, except position lights in the steady position and equipment required by approved loading or unloading procedures, as set forth in the operator's operations manual, or for operators that are not certificate holders, as set forth in a written statement.

(iii) No person may fill a container, other than an approved bulk tank, with a flammable or combustible liquid or discharge a flammable or combustible liquid from a container, other than an approved bulk tank, while that container is inside or within 50 feet of the aircraft.

(iv) When filling an approved bulk tank by hose from inside the aircraft, the doors and hatches must be fully open to insure proper ventilation.

(v) Static ground wires must be connected between the storage tank or fueler and the aircraft, and between the aircraft and a positive ground device.

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-1A, 41 FR 40686, Sept. 20, 1976]

NOTE: For amendments to § 175.320 see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 175.630 Special requirements for poisons.

(a) No person may transport a package bearing a POISON label aboard an aircraft in the same cargo compartment with material which is marked as or known to be food stuff, feed, or any other edible material intended for consumption by humans or animals.

(b) No person may operate an aircraft that has been used to transport any package bearing a POISON label unless, upon removal of such package, the area in the aircraft in which it was carried is visually inspected for evidence of leakage, spillage, or other contamination. All contamination discovered must be either isolated or removed from the aircraft. The operation of an aircraft contaminated with such poisons is considered to be the carriage of poisonous materials under paragraph (a) of this section.

§ 175.640 Special requirements for other regulated materials.

Asbestos must be loaded, handled, and unloaded, and any asbestos contamination of aircraft removed, in a manner that will minimize occupational exposure to airborne asbestos particles released incident to transportation. (See § 173.1090 of this subchapter.)

[Amdt. 175-7, 43 FR 56668, Dec. 4, 1978]

§ 175.700 Special requirements for radioactive materials.

(a) No person may place any package of radioactive materials bearing

EXCERPT FROM CFR 49 PART 175

"RADIOACTIVE YELLOW-II" or "RADIOACTIVE YELLOW-III" labels in an aircraft closer than the distances shown in the following table to a space (or dividing partition between spaces) which may be continuously occupied by people, or shipments of animals, or closer than the distances shown in the following table to any package containing undeveloped film (if so marked). If more than one of these packages is present, the distance shall be computed from the following table on the basis of the total transport index numbers shown on labels of the individual packages in the aircraft:

Total transport index	Minimum separation distances in feet to the nearest undeveloped film for various times of transit					Minimum distance in feet to area of persons, or minimum distance in feet from dividing partition of cargo compartment
	Up to 2 hr	2-4 hr	4-8 hr	8-12 hr	Over 12 hr	
None	0	0	0	0	0	0
0.1 to 1.0	1	2	3	4	5	1
1.1 to 5.0	3	4	6	8	11	2
5.1 to 10.0	4	6	9	11	15	3
10.1 to 20.0	5	8	12	16	22	4
20.1 to 30.0	7	10	15	20	29	5
30.1 to 40.0	8	11	17	22	33	6
40.1 to 50.0	9	12	19	24	36	7

(b) In addition to the reporting requirements of § 175.45, the carrier must also notify the shipper at the earliest practicable moment following any incident in which there has been breakage, spillage, or suspected radioactive contamination involving radioactive materials shipments. Aircraft in which radioactive materials have been spilled may not be again placed in service or routinely occupied until the radiation does rate at any accessible surface is less than 0.5 millirem per hour and there is no significant removable radioactive surface contamination (see § 173.397 of this subchapter). In these instances, the package or materials should be segregated as far as practicable from personnel contact. If radiological advice or assistance is needed, the U.S. Energy Research and Development Administration should also be notified. In case of obvious leakage, or if it appears likely that the inside container may have been damaged, care should be taken to avoid inhalation, ingestion, or contact with the radioactive materials. Any loose radioactive materials should be left in a segregated area pending disposal instructions from qualified persons.

(c) No person may carry aboard a passenger-carrying aircraft any package of radioactive material which contains a large quantity (large radioactive source) of radioactivity (as defined in § 173.389(b) of this subchapter), except as specifically approved by the Director, Office of Hazardous Materials Regulation, Materials Transportation Bureau, Department of Transportation.

(d) Except as provided in this paragraph, no person may carry aboard a passenger-carrying aircraft any radioactive material other than a radioactive material intended for use in, or incident to, research or medical diagnosis or treatment. Prior to May 3, 1981, this prohibition does not apply to materials which meet the requirements of § 173.391(a), (b), or (c) of this subchapter in effect on May 3, 1979.

(49 U.S.C. 1803, 1804, 1806, 1808; 49 CFR 1.53 and App. A to Part 1)

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-4, 42 FR 22367, May 3, 1977]

NOTE: For amendments to § 175.700 see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

EXCERPT FROM CFR 49 PART 175

§ 175.710 Special requirements for fissile Class III radioactive materials.

(a) No person may carry aboard any aircraft any package of fissile Class III radioactive material (as defined in § 173.389(a)(3) of this subchapter), except as follows:

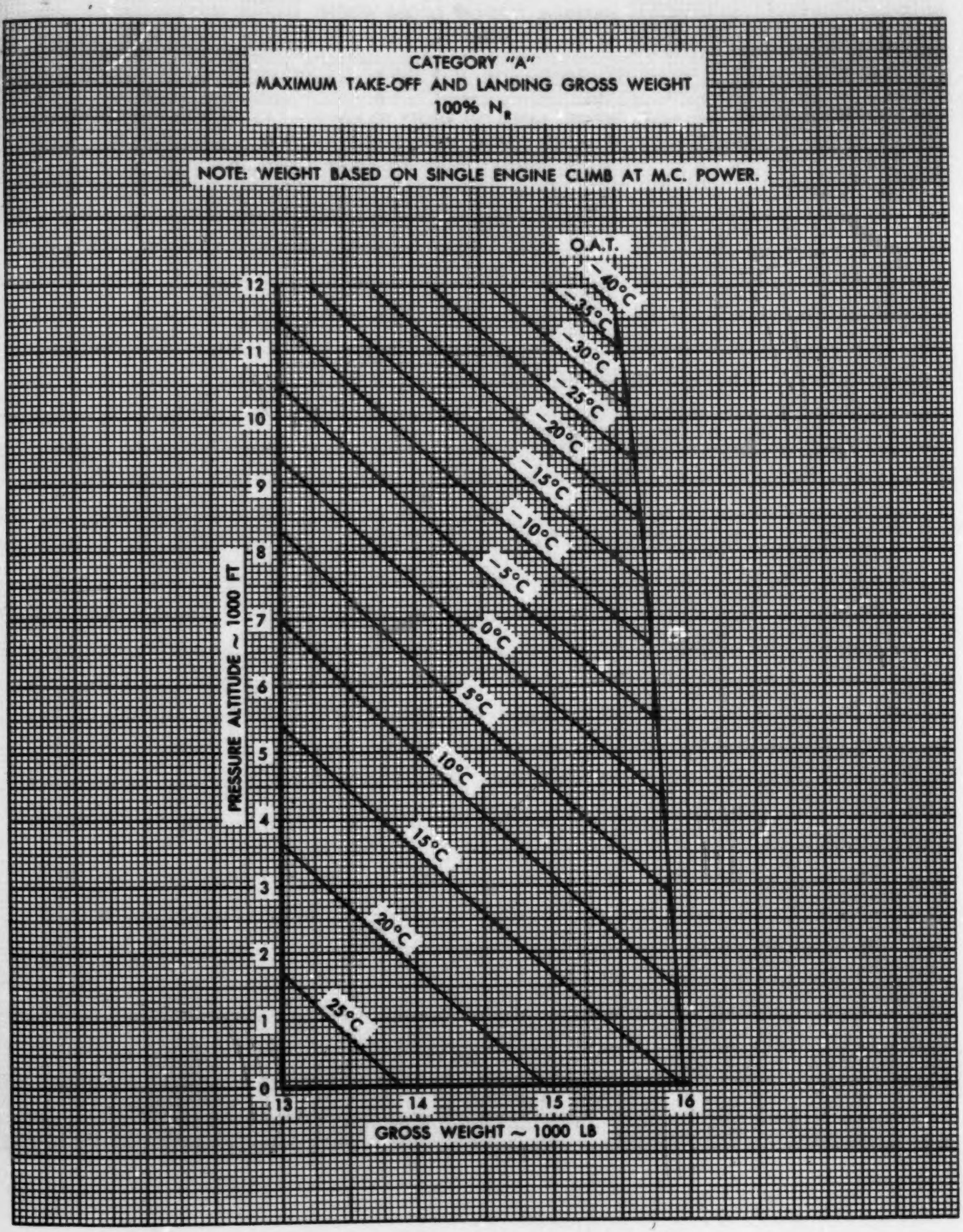
(1) On a cargo-only aircraft which has been assigned for the sole use of the consignor for the specific shipment of fissile radioactive material. Instructions for such sole use must be provided for in special arrangements between the consignor and carrier, with instructions to that effect issued with shipping papers; or

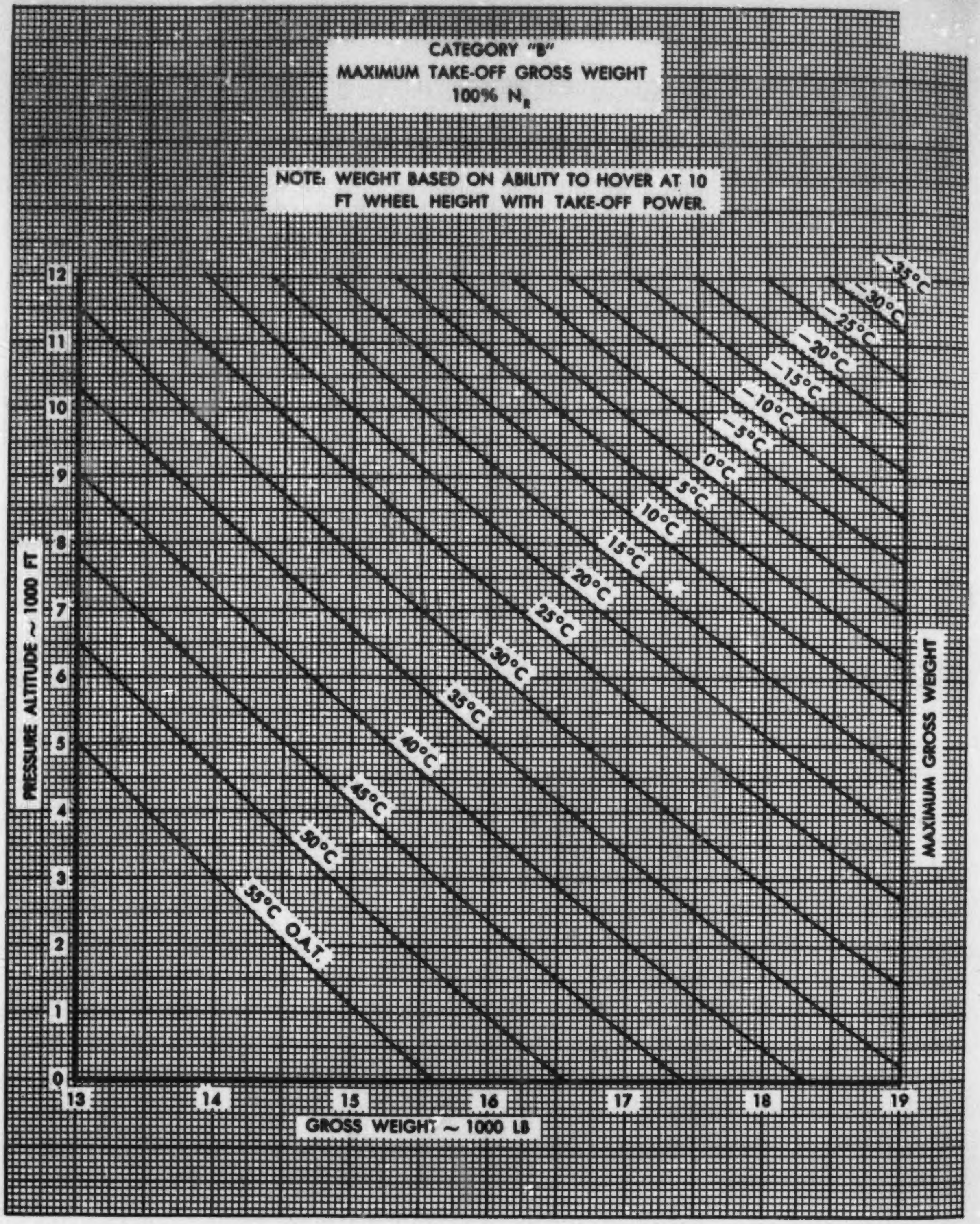
(2) On any aircraft on which there is no other package of radioactive materials required to bear one of the RADIOACTIVE labels described in §§ 172.436, 172.438, and 172.440 of this subchapter. Specific arrangements must be effected between the shipper and carriers, with instructions to that effect issued with the shipping papers; or

(3) In accordance with any other procedure specifically approved by the Director, Office of Hazardous Materials Regulation, Materials Transportation Bureau.

[Amdt. 175-1, 41 FR 16106, Apr. 15, 1976, as amended by Amdt. 175-6, 43 FR 48645, Oct. 19, 1978]

APPENDIX 3


CATEGORY "A"
MAXIMUM TAKE-OFF AND LANDING GROSS WEIGHT
100% N_R
NOTE: WEIGHT BASED ON SINGLE ENGINE CLIMB AT M.C. POWER.
O.A.T.
−40°C
−35°C
−30°C
−25°C
−20°C
−15°C
−10°C
−5°C
0°C
5°C
10°C
15°C
20°C
25°C
PRESSURE ALTITUDE ~ 1000 FT
12
11
10
9
8
7
6
5
4
3
2
1
0
13
14
15
16
GROSS WEIGHT ~ 1000 LB



CATEGORY "B"
MAXIMUM TAKE-OFF GROSS WEIGHT
100% N_R

NOTE: WEIGHT BASED ON ABILITY TO HOVER AT 10 FT WHEEL HEIGHT WITH TAKE-OFF POWER.

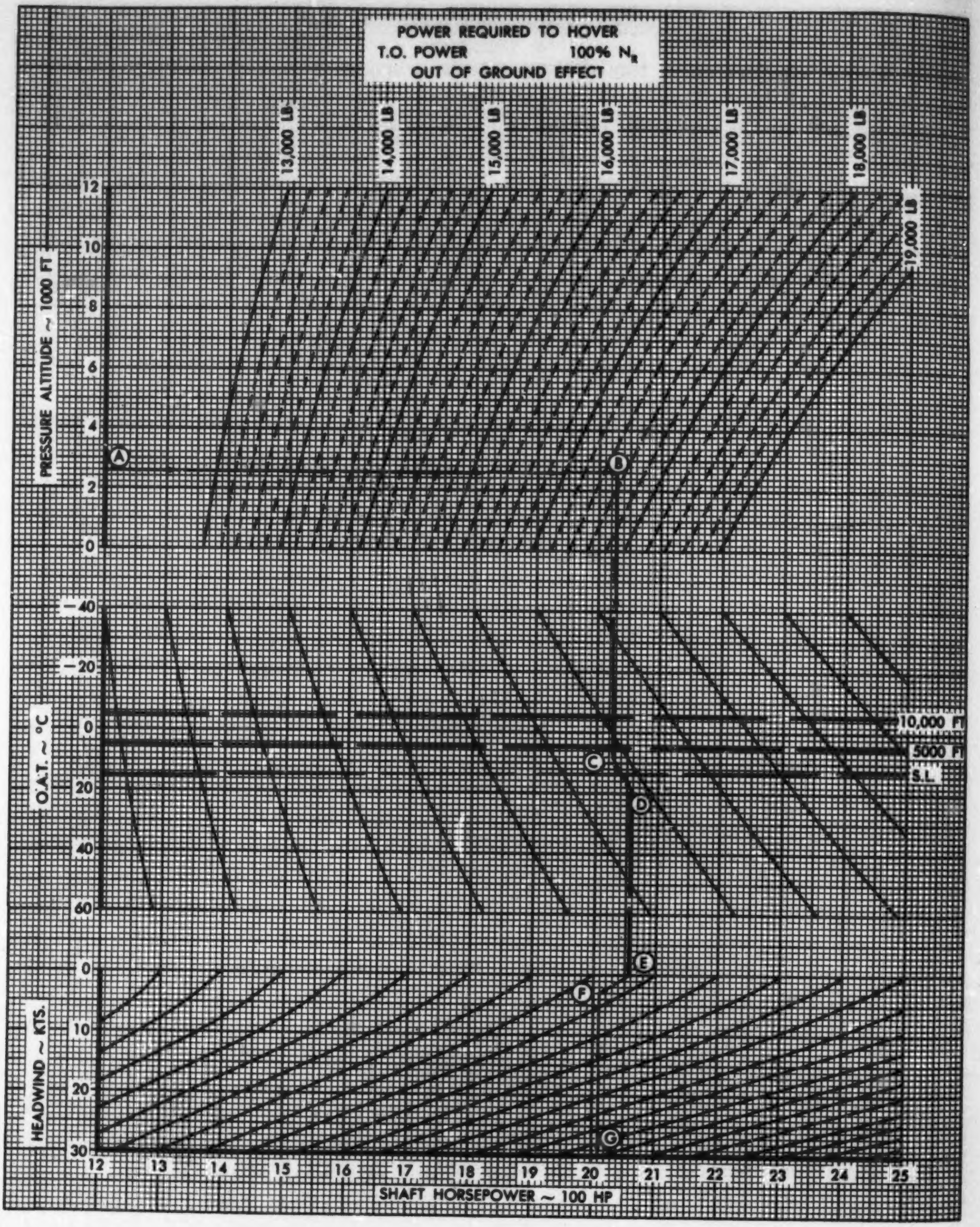
USE OF HOVER PERFORMANCE CHART

Problem: Determine the power required to hover out of ground effect at 2500 feet pressure altitude, 20°C OAT, 17,500 pounds gross weight, a 3 knot headwind, and 100% (203 RPM) rotor speed.

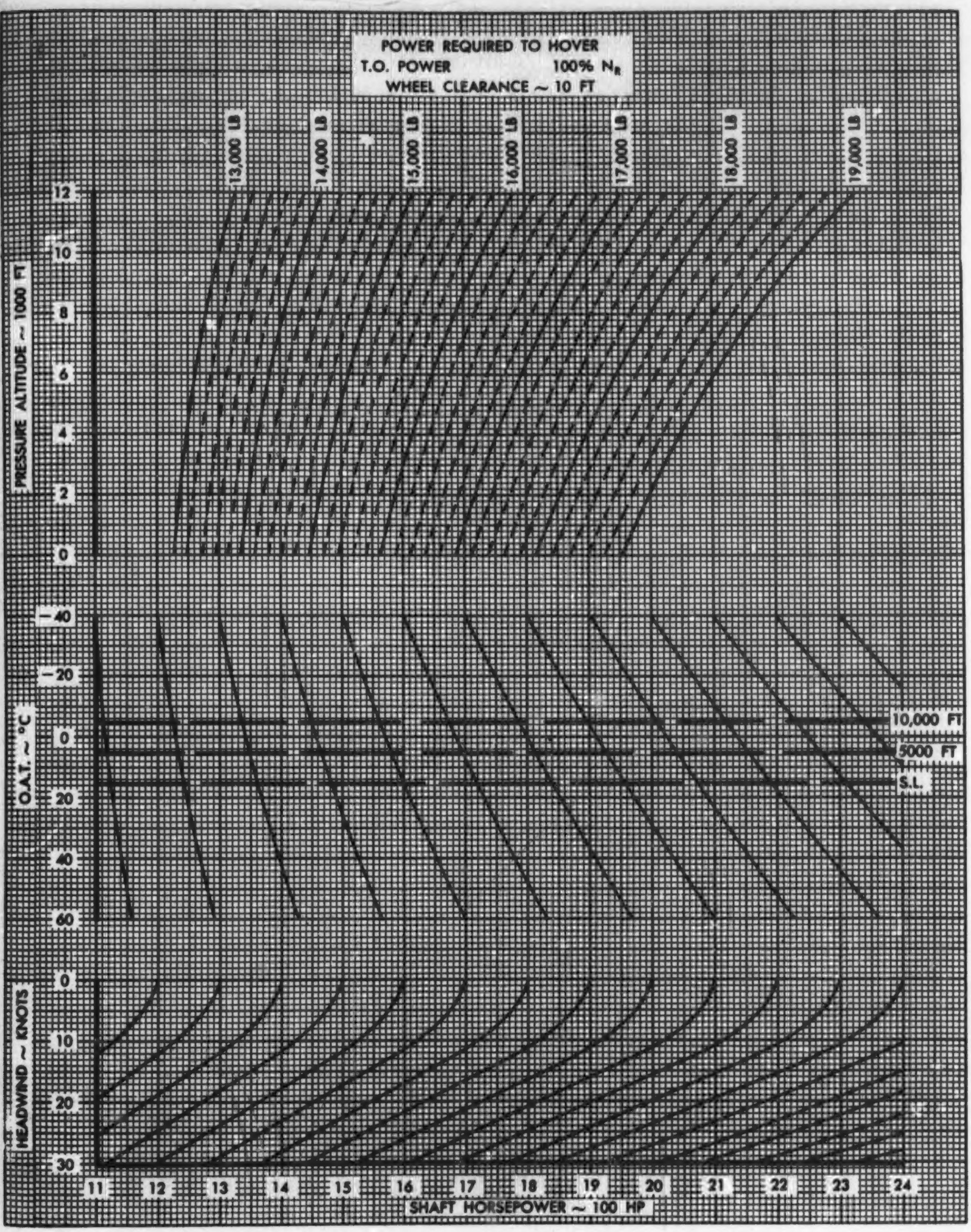
Solution:

1. Enter the chart at a pressure altitude of 2500 feet, (A).
2. From (A), move horizontally to intersect the basic hover curves at a gross weight of 17,500 pounds, (B).
3. From (B), move vertically down to an altitude of 2500 feet, (C).
4. From (C), move parallel to the temperature influence lines to an OAT of 20°C, (D).
5. From (D), move vertically down to a headwind base line at zero knots, (E).
6. From (E) move parallel to the headwind influence lines to a headwind of 3 knots, (F).
7. From (F), move vertically down to read shaft horsepower at (G).

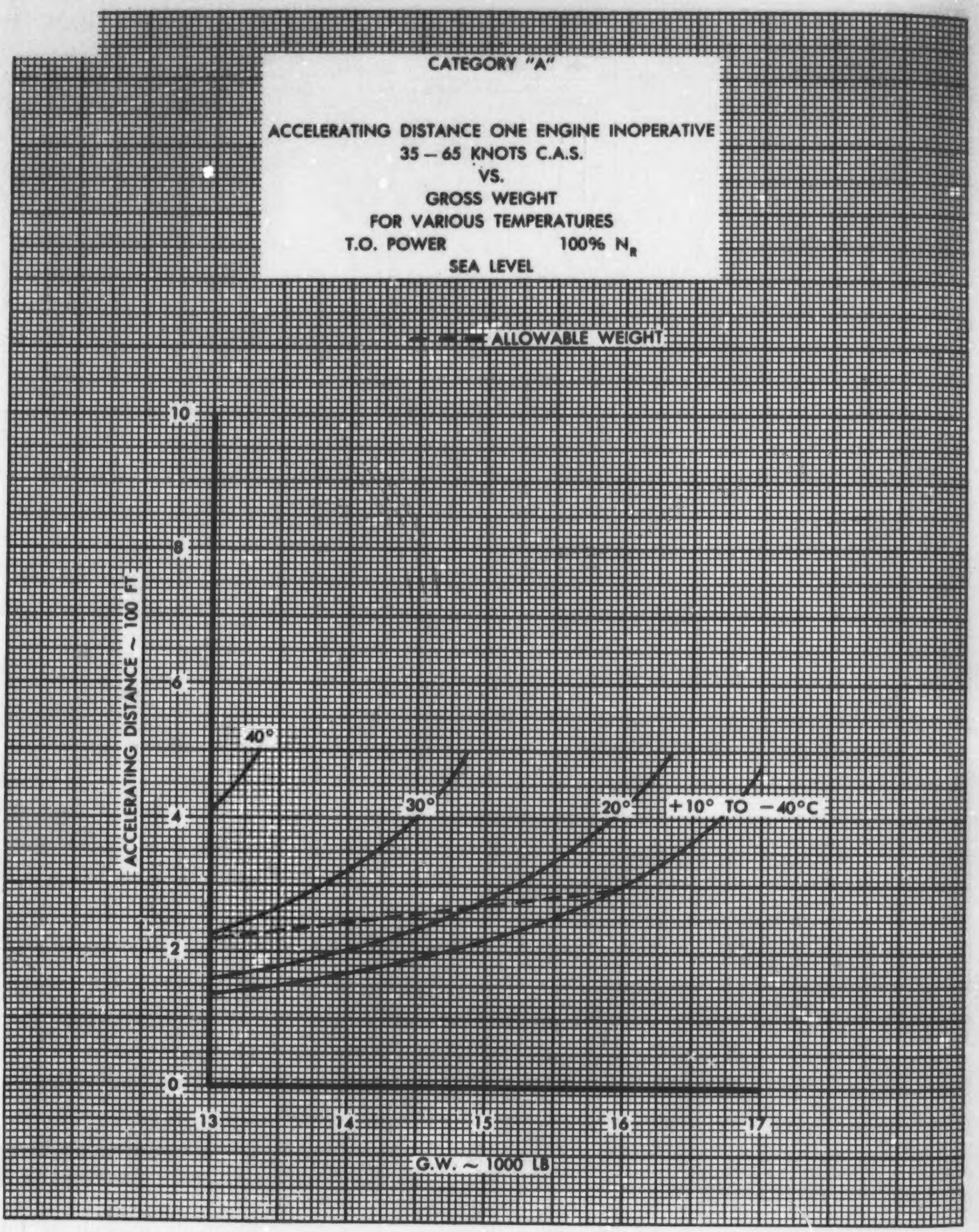
For the above conditions, 2010 SHP is required to hover, as read at (G).



POWER REQUIRED TO HOVER
T.O. POWER 100% N_R
OUT OF GROUND EFFECT

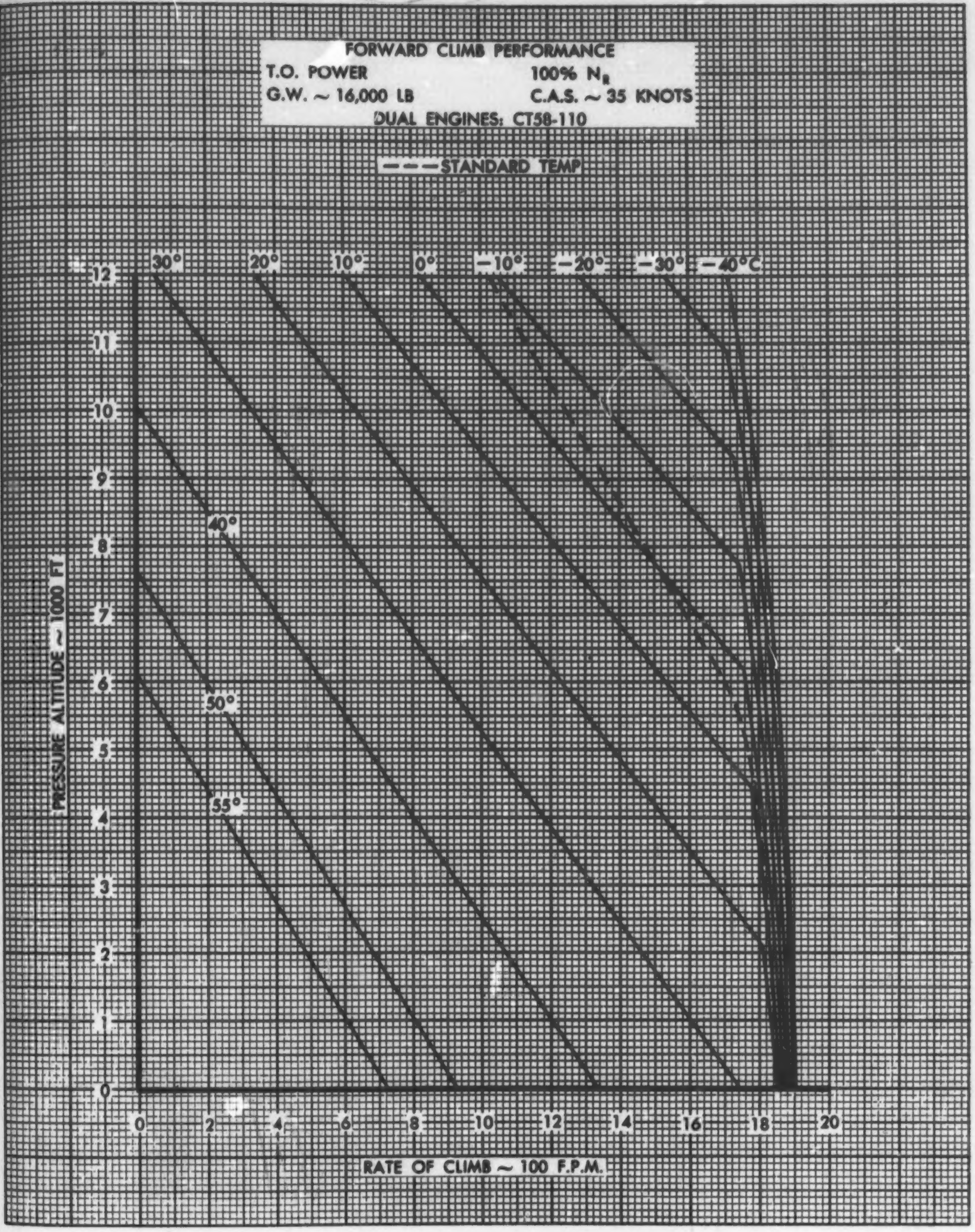


POWER REQUIRED TO HOVER
T.O. POWER 100% N_R
WHEEL CLEARANCE ~ 10 FT

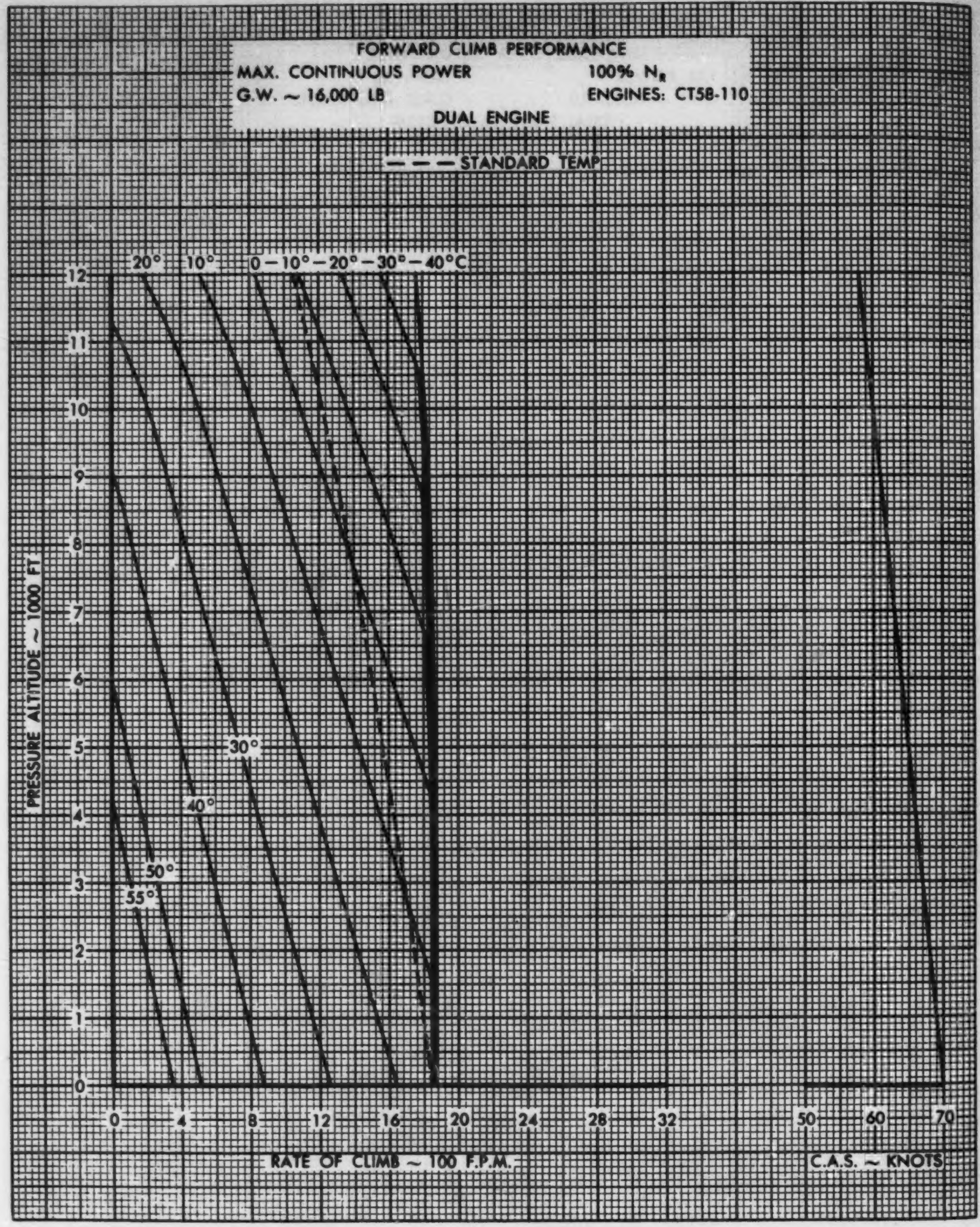


CATEGORY "A"

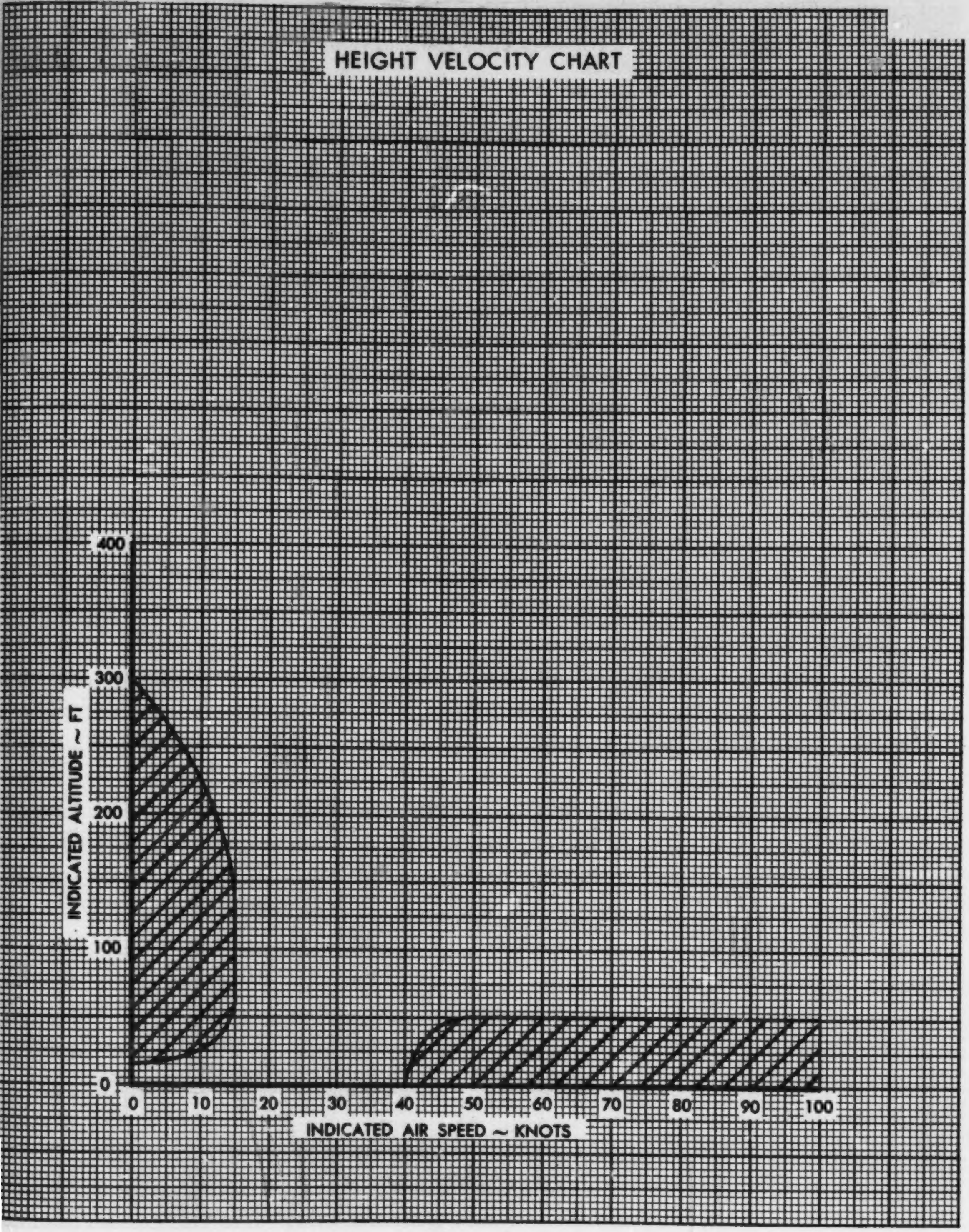
ACCELERATING DISTANCE ONE ENGINE INOPERATIVE
35 – 65 KNOTS C.A.S.
VS.
GROSS WEIGHT
FOR VARIOUS TEMPERATURES
T.O. POWER 100% N_R
SEA LEVEL



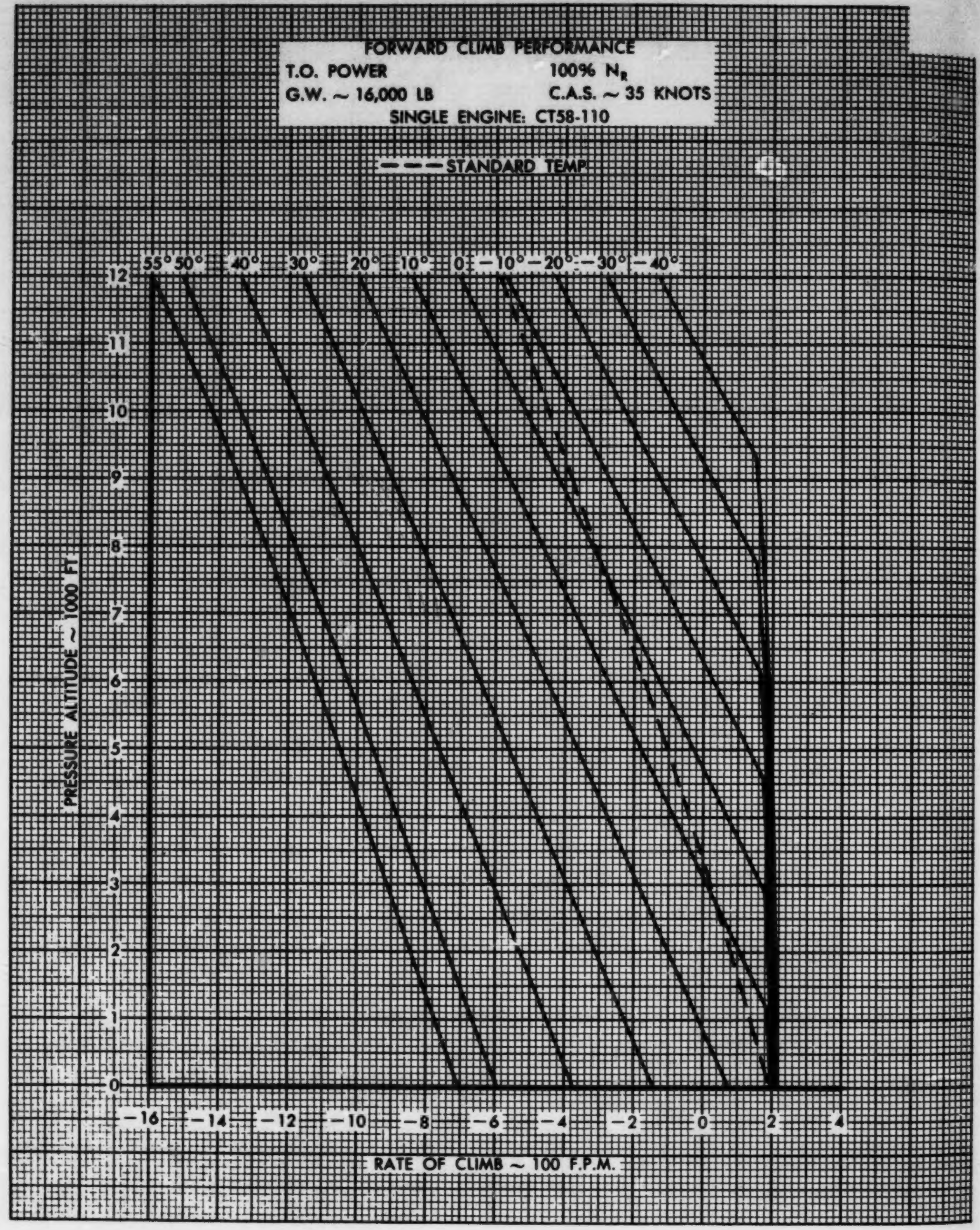
FORWARD CLIMB PERFORMANCE
T.O. POWER 100% N_R
G.W. ~ 16,000 LB C.A.S. ~ 35 KNOTS
DUAL ENGINES: CT58-110



FORWARD CLIMB PERFORMANCE
MAX. CONTINUOUS POWER 100% N_R
G.W. ~ 16,000 LB ENGINES: CT58-110
DUAL ENGINE



HEIGHT VELOCITY CHART



FORWARD CLIMB PERFORMANCE

T.O. POWER 100% N_R

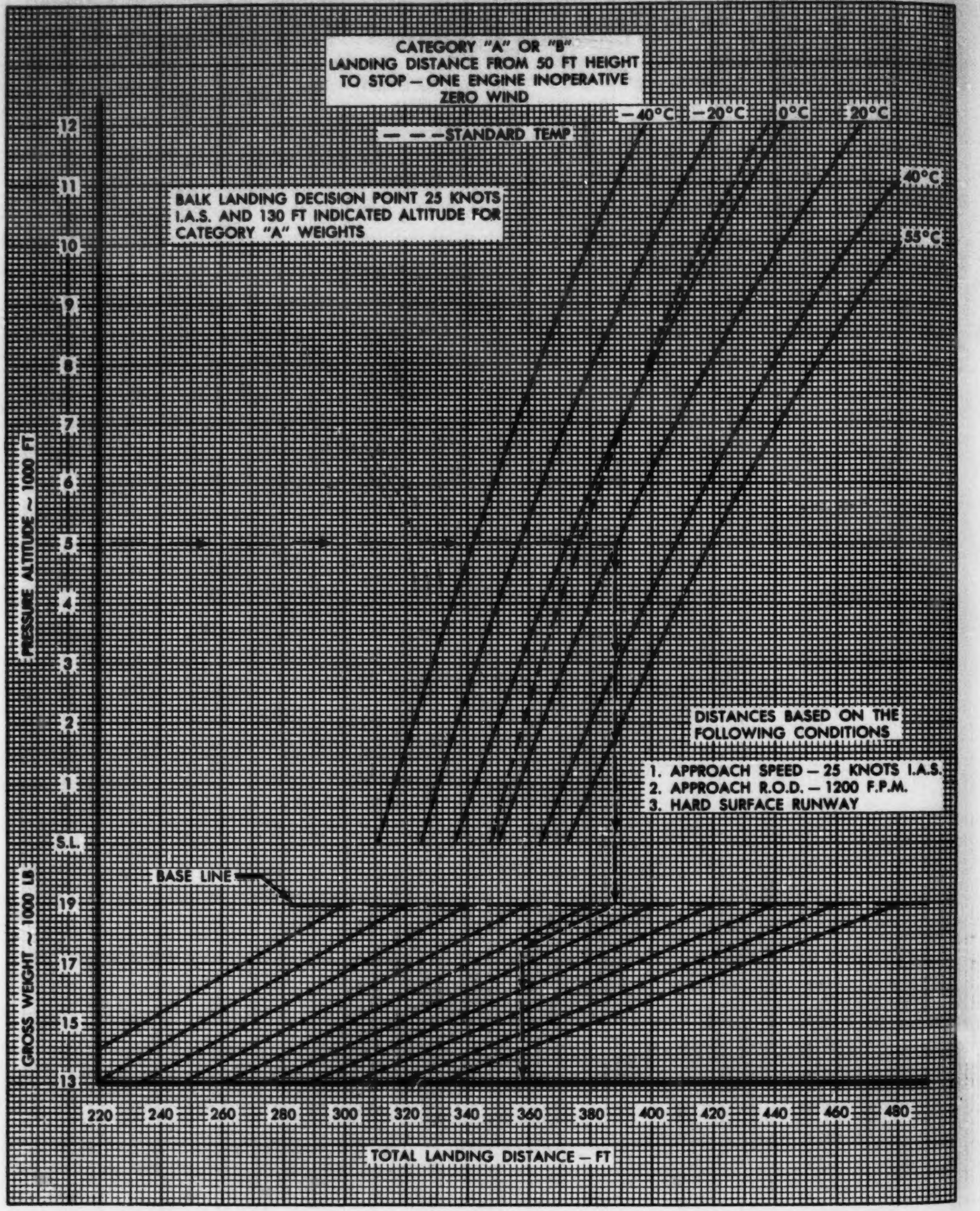
G.W. ~ 16,000 LB C.A.S. ~ 35 KNOTS

SINGLE ENGINE: CT58-110

USE OF LANDING DISTANCE CHART FOR A TYPICAL LANDING FOR CATEGORY A OR B

Problem: Determine the landing distance for an aircraft weighing 17,500 lbs landing at 5000 feet pressure altitude with the temperature at 20°C. The aircraft has an approach speed of 25 knots IAS, a touchdown speed of 15 knots and an approach rate-of-descent of 1200 fpm.

Solution: Enter the curve at the pressure altitude of 5000 feet and move horizontally to the intersect with the temperature of 20°C. From this point proceed vertically down to the weight baseline of 19,000 lbs. From this baseline move parallel to the gross weight influence lines to the gross weight of 17,500 lbs. From this point move vertically down to determine the total landing distance. The total landing distance for the above stated conditions is 358 feet.



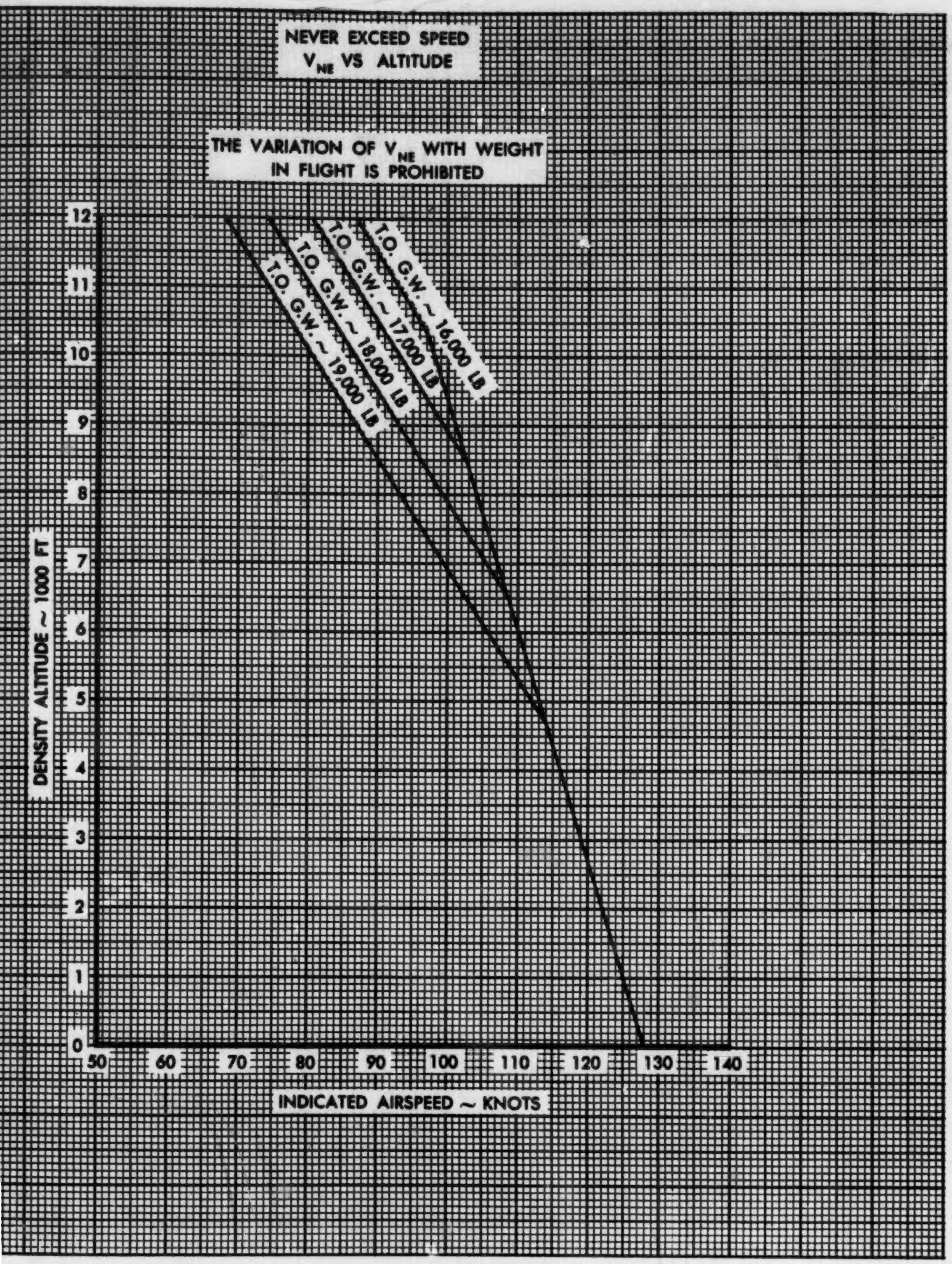
CATEGORY "A" OR "B"
LANDING DISTANCE FROM 50 FT HEIGHT
TO STOP — ONE ENGINE INOPERATIVE
ZERO WIND

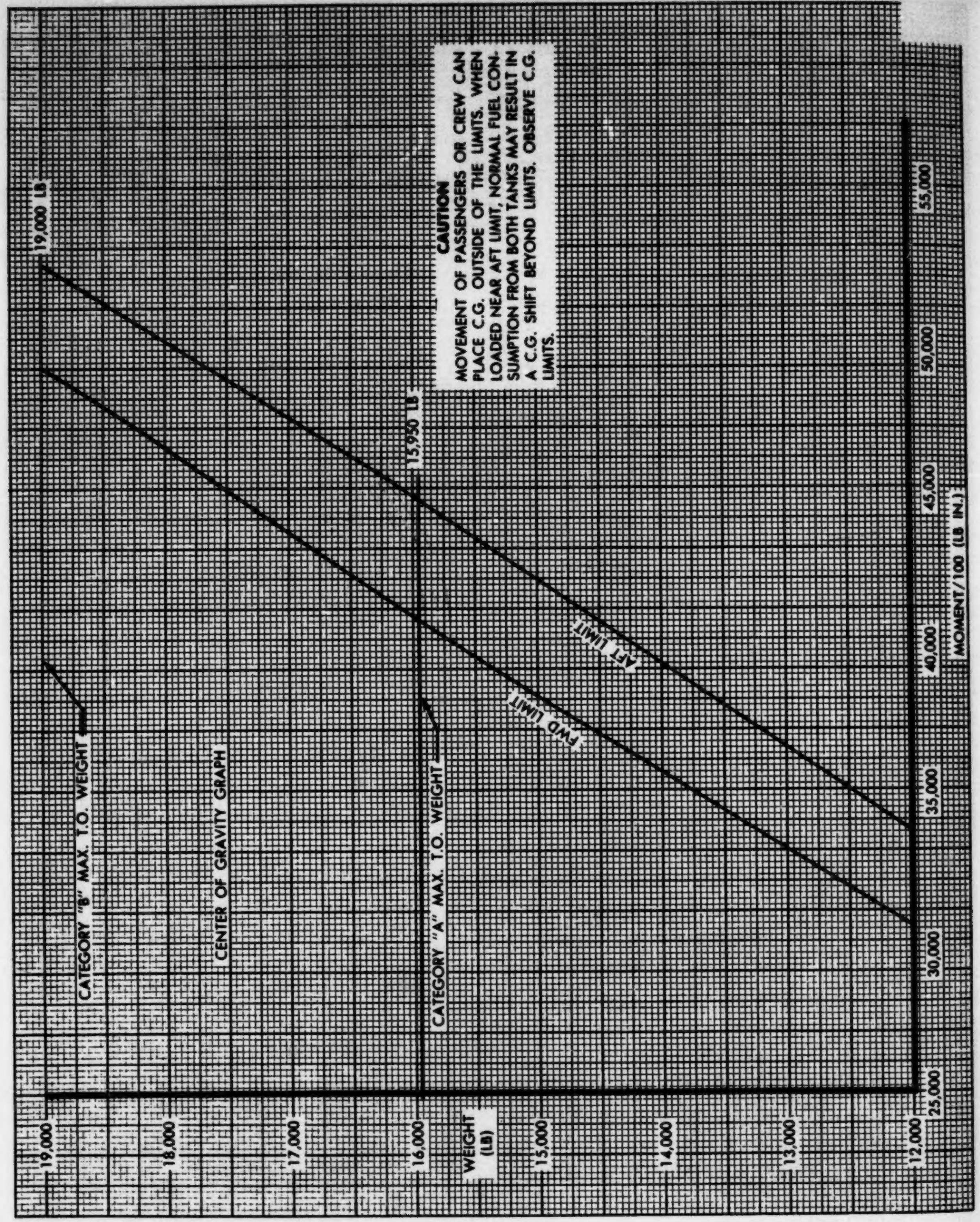
— — —STANDARD TEMP

BALK LANDING DECISION POINT 25 KNOTS I.A.S. AND 130 FT INDICATED ALTITUDE FOR CATEGORY "A" WEIGHTS

DISTANCES BASED ON THE FOLLOWING CONDITIONS

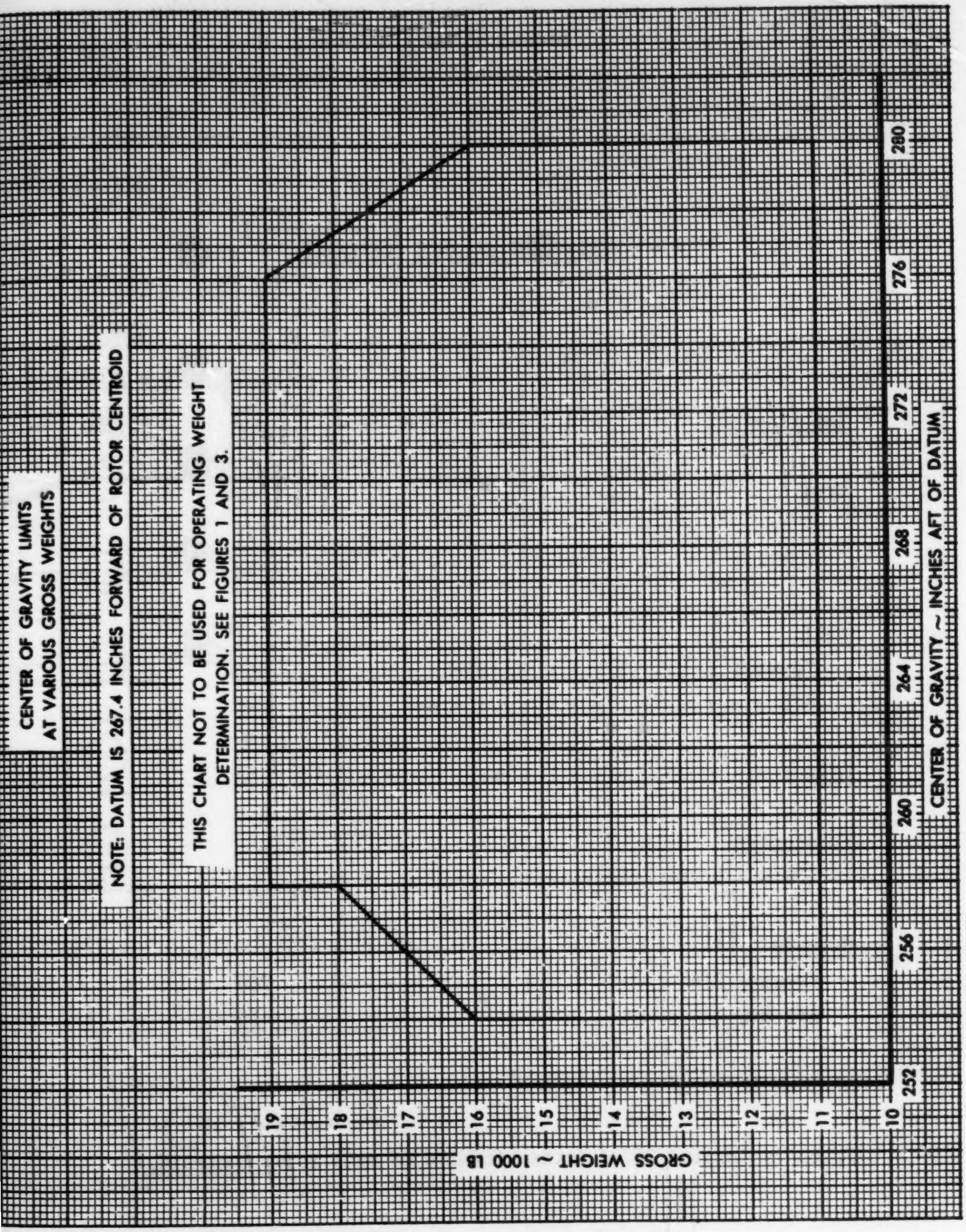
1. APPROACH SPEED — 25 KNOTS I.A.S.
2. APPROACH R.O.D. — 1200 F.P.M.
3. HARD SURFACE RUNWAY


NEVER EXCEED SPEED
V_{NE} VS ALTITUDE
THE VARIATION OF V_{NE} WITH WEIGHT IN FLIGHT IS PROHIBITED
T.O. G.W. ~ 16,000 LB
T.O. G.W. ~ 17,000 LB
T.O. G.W. ~ 18,000 LB
T.O. G.W. ~ 19,000 LB
DENSITY ALTITUDE ~ 1000 FT
0
1
2
3
4
5
6
7
8
9
10
11
12
50
60
70
80
90
100
110
120
130
140
INDICATED AIRSPEED ~ KNOTS



CAUTION

MOVEMENT OF PASSENGERS OR CREW CAN PLACE C.G. OUTSIDE OF THE LIMITS. WHEN LOADED NEAR AFT LIMIT, NORMAL FUEL CONSUMPTION FROM BOTH TANKS MAY RESULT IN A C.G. SHIFT BEYOND LIMITS. OBSERVE C.G. LIMITS.


CENTER OF GRAVITY LIMITS
AT VARIOUS GROSS WEIGHTS

NOTE: DATUM IS 267.4 INCHES FORWARD OF ROTOR CENTROID

THIS CHART NOT TO BE USED FOR OPERATING WEIGHT DETERMINATION. SEE FIGURES 1 AND 3.

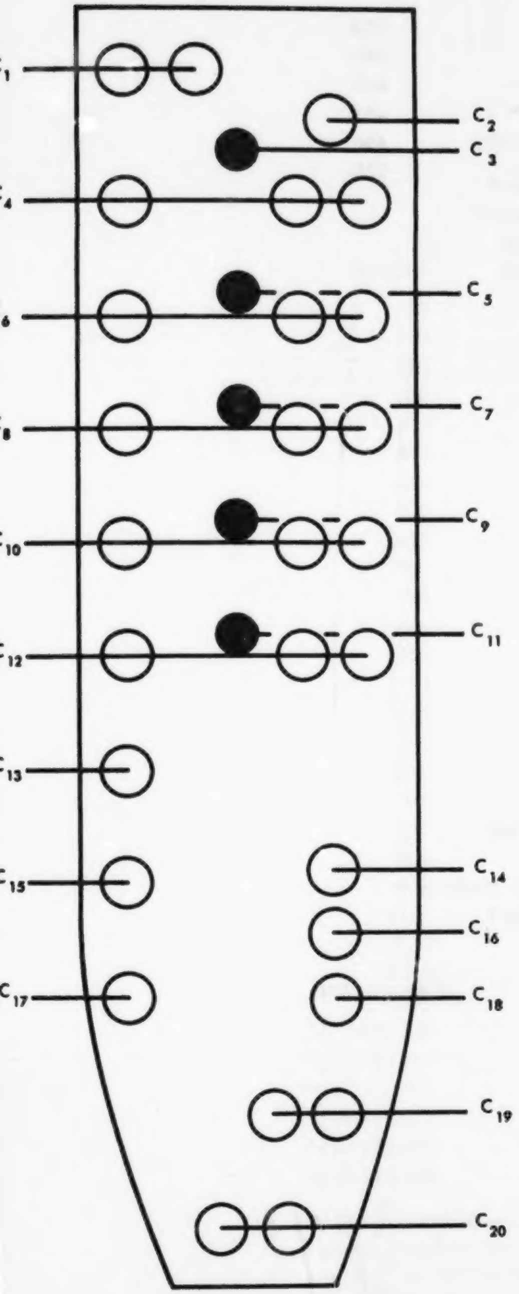
WEIGHT AND BALANCE CLEARANCE

	WEIGHT (Pounds)	MOMENT (/100)
Empty Weight	12,250	31,850
Crew		
Pilot	175	
Copilot	165	
Fuel		
Forward	950	
Aft	750	
Oil	30	
Passengers		
(20 @ 170 lbs. each)		12,225
Baggage		
Forward Bin	250	
Aft Bin	50	

MAXIMUM GROSS WEIGHT: 19,000 lbs.

Datum is located 267.4 inches forward of main rotor centroid.

PASSENGER & CARGO CENTROIDS


C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20

○ PASSENGER CENTROID

● CARGO CENTROID

COMPT.	CENTROID	MAXIMUM WEIGHT (POUNDS)
C_1	128.5	340
C_2	142.5	170
C_3	152.0	5,440
C_4	167.0	510
C_5	194.5	3,640
C_6	201.0	510
C_7	228.5	3,640
C_8	235.0	510
C_9	262.5	3,640
C_{10}	269.0	510
C_{11}	296.5	3,640
C_{12}	303.0	510
C_{13}	337.0	170
C_{14}	366.0	170
C_{15}	371.0	170
C_{16}	384.5	170
C_{17}	404.5	170
C_{18}	405.0	170
C_{19}	439.0	340
C_{20}	468.0	340

CREW TABLE

Weight (Pounds)	Pilot and Co-Pilot Arm = 88.6 Moment/100	Attendant Arm = 350.0 Moment/100
100	87	350
110	97	385
120	106	420
130	115	455
140	124	490
150	133	525
160	142	
170	151	
180	159	
190	168	
200	177	
210	186	
220	195	
230	204	
240	213	
250	222	
260	230	
270	239	
280	248	
290	257	
300	266	
310	275	
320	284	
330	292	
340	301	

OIL TABLE

Capacity = 5.0 Gallons
Arm = 182.5

U.S. Gallons	Weight (Pounds)	Moment/100
0.5	3.8	7
1.0	7.5	14
1.5	11.3	21
2.0	15.0	27
2.5	18.8	34
3.0	22.5	41
3.5	26.3	48
4.0	30.0	55
4.5	33.8	62
5.0	37.5	68

FUEL TABLE
(GRAVITY FUELING)

Pounds	Fwd Fuel Tank Capacity = 210.0 Arm = 203.9 Moment/100	Aft Fuel Tank Capacity = 200.0 Arm = 305.9 Moment/100
50	102	153
100	204	306
150	306	459
200	408	612
250	510	765
300	612	918
350	714	1071
400	816	1224
450	918	1377
500	1020	1530
550	1121	1682
600	1223	1835
650	1325	1988
700	1427	2141
750	1529	2294
800	1631	2447
850	1733	2600
900	1835	2753
950	1937	2906
1000	2039	3059
1050	2141	3212
1100	2243	3365
1150	2345	3518
1200	2447	3671
1250	2549	3824
*(JP-4) 1300	2651	3977
*(JP-1) 1350	2753	4130
*(JP-5) 1360	2773	4160
*(JP-4) 1365	2783	
*(JP-1) 1418	2891	
*(JP-5) 1428	2912	

*Approximate weight and moment for full fuel tank, under standard conditions (60°F) and based on 6.5 #/gal. for JP-4, 6.75 #/gal. for JP-1, and 6.8 #/gal. for JP-5 is indicated by an asterisk (*).

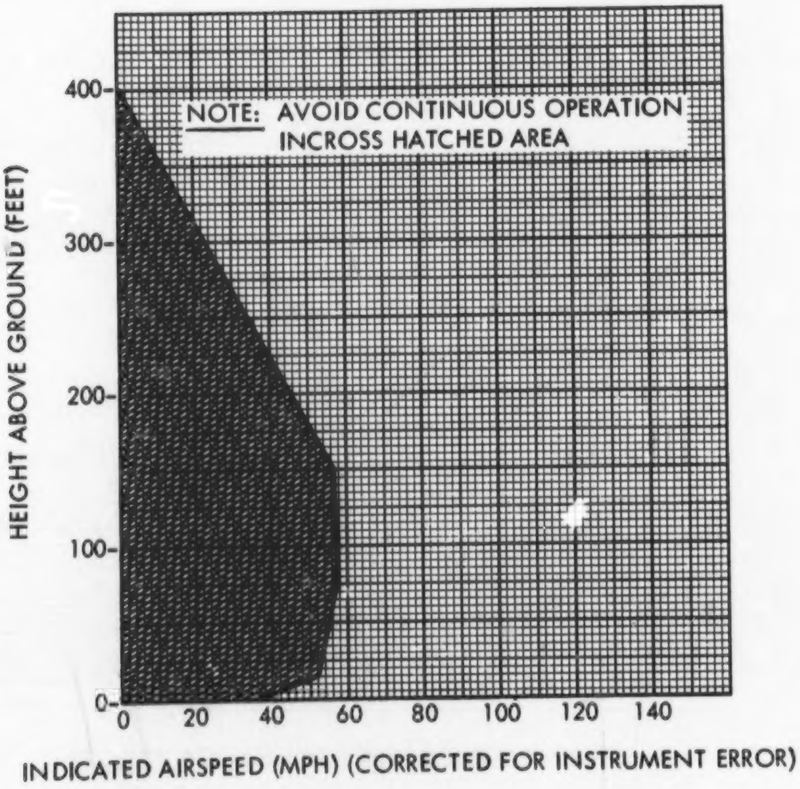
BAGGAGE POD AND BINS TABLE

Weight (Pounds)	Baggage Pod Arm = 148.5 Moment/100	Fwd Bin Arm = 374.0 Moment/100	Aft Bin Arm = 408.0 Moment/100
50	74	187	204
100	149	374	408
150	223	561	612
200	297	748	816
250	371	935	1020
*300	446	1122	1224
350	520		
400	594		
450	668		
500	742		
550	817		
600	891		
650	965		
700	1040		
750	1114		
800	1188		
850	1262		
900	1337		
950	1411		
1000	1485		
1050	1559		
1100	1634		
1150	1708		
**1200	1782		

*Maximum Capacity Each Bin
**Maximum Capacity Baggage Pod

HEIGHT-VELOCITY DIAGRAM

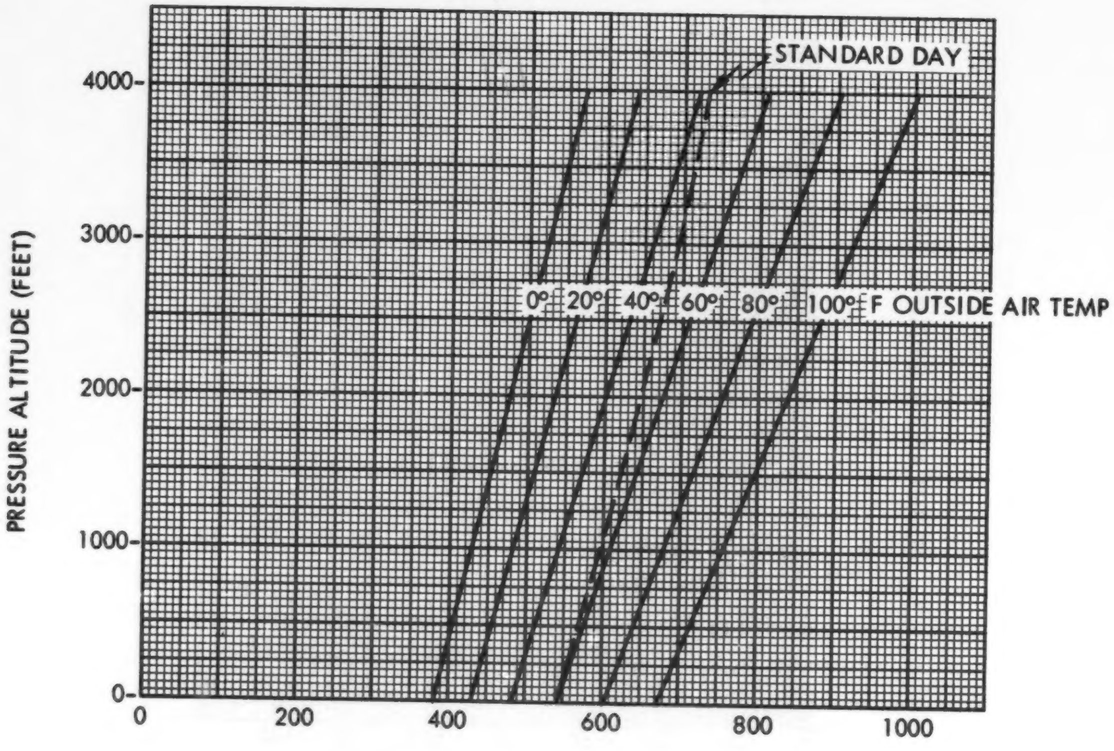
HARD SURFACE RUNWAY
WIND-CALM



NOTE: AVOID CONTINUOUS OPERATION INCROSS HATCHED AREA

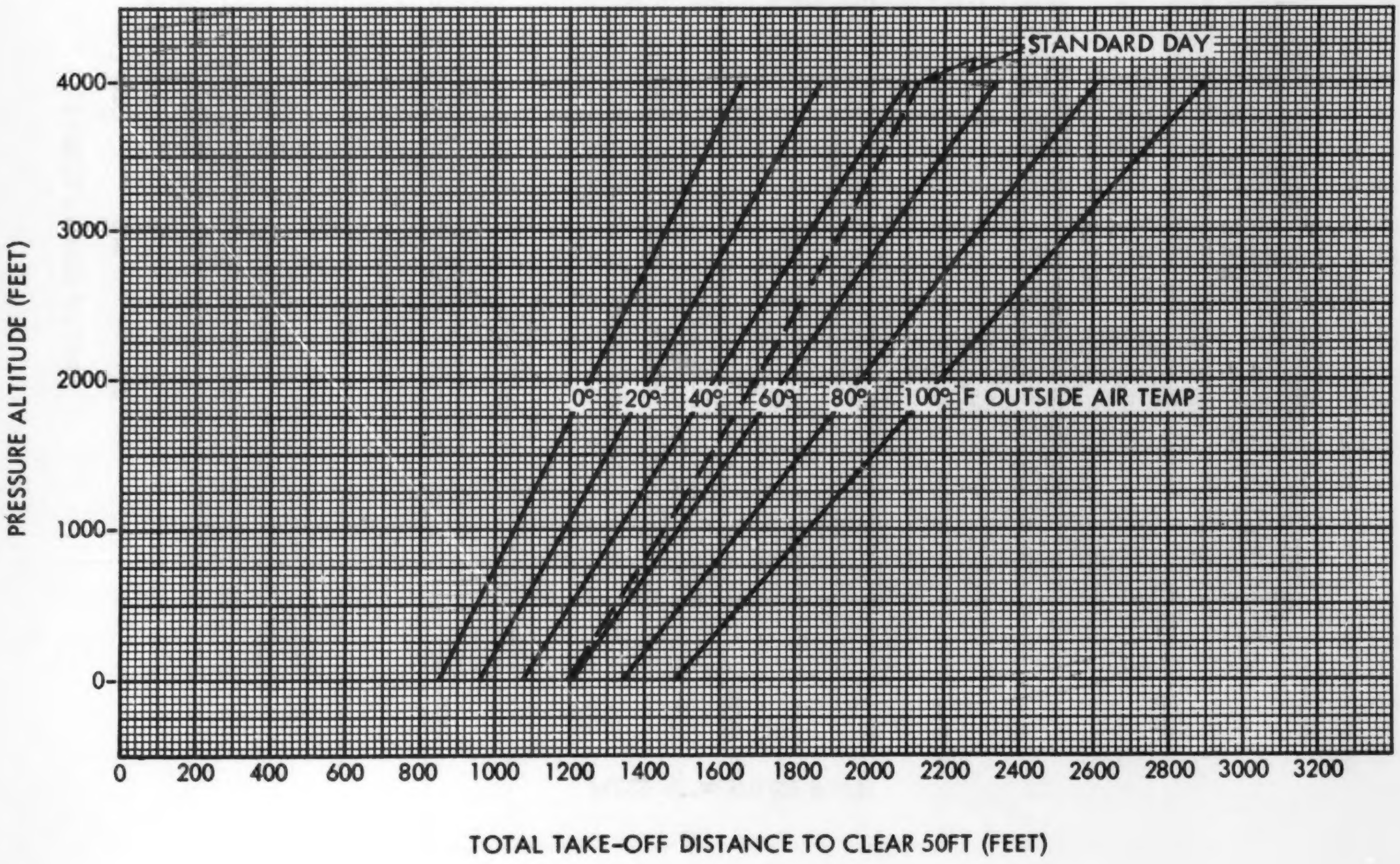
GROUND RUN DISTANCES TO LIFT-OFF

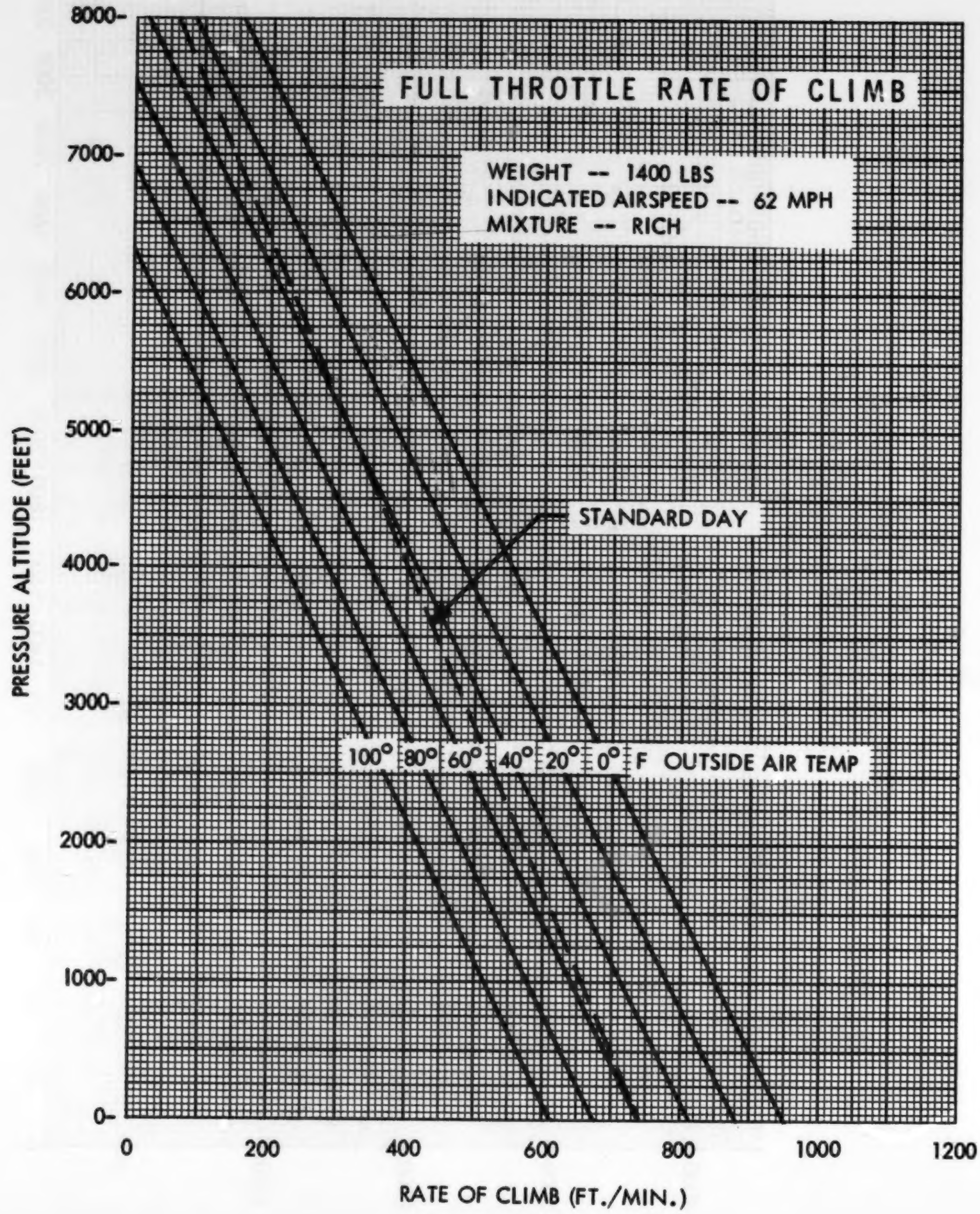
WEIGHT 1500 LBS - ZERO WIND
ROTOR PRE-ROTATED TO 450 RPM
SMOOTH HARD SURFACE RUNWAY



TOTAL TAKE-OFF DISTANCE TO CLEAR A 50-FT OBSTACLE

WEIGHT 1500 LBS
ZERO WIND
ROTOR PRE-ROTATED TO 450 RPM
SMOOTH HARD SURFACE RUNWAY

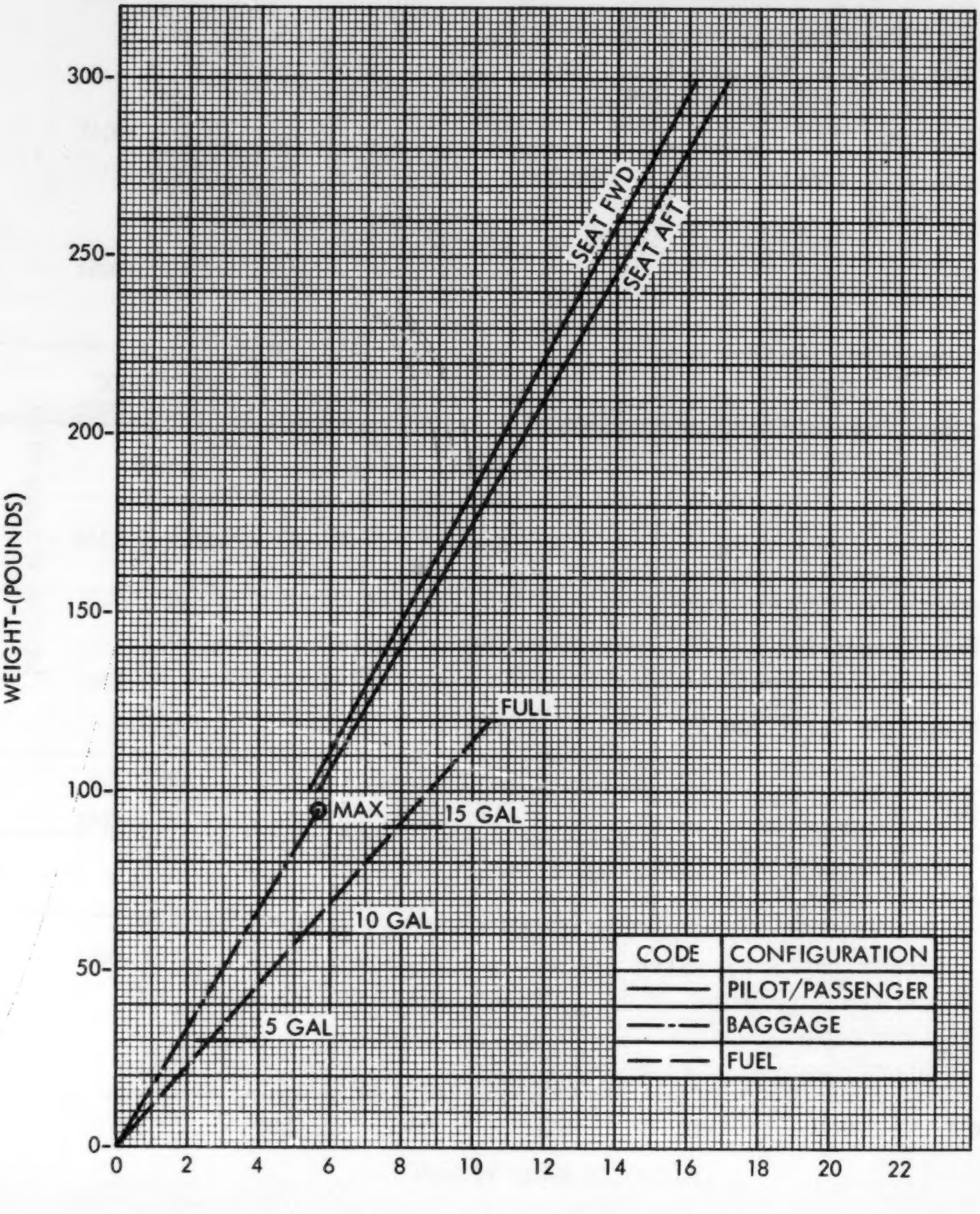



FULL THROTTLE RATE OF CLIMB
WEIGHT -- 1400 LBS
INDICATED AIRSPEED -- 62 MPH
MIXTURE -- RICH
STANDARD DAY
100° 80° 60° 40° 20° 0° F OUTSIDE AIR TEMP
PRESSURE ALTITUDE (FEET)
8000-
7000-
6000-
5000-
4000-
3000-
2000-
1000-
0-
0
200
400
600
800
1000
1200
RATE OF CLIMB (FT./MIN.)

WEIGHT AND BALANCE FORM

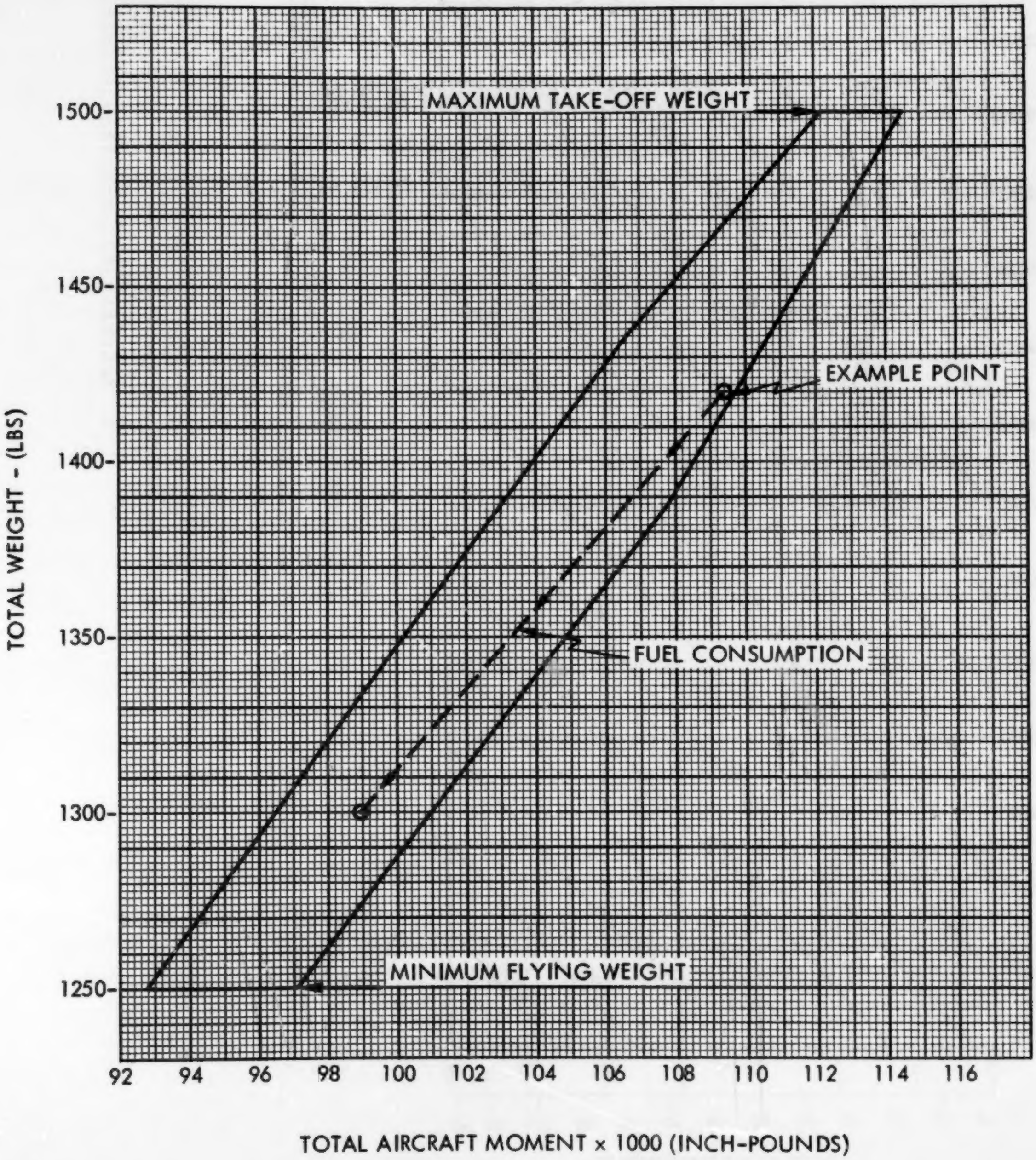
ITEM	WEIGHT	MOM./1,000
Empty Weight	1,047	85.6
Oil	11	1.0
Pilot (seat fwd.)	164	
Passenger (seat fwd.)	167	
Baggage	40	
Fuel (6 lbs./gal.)	15 gals.	

LOADING CHART

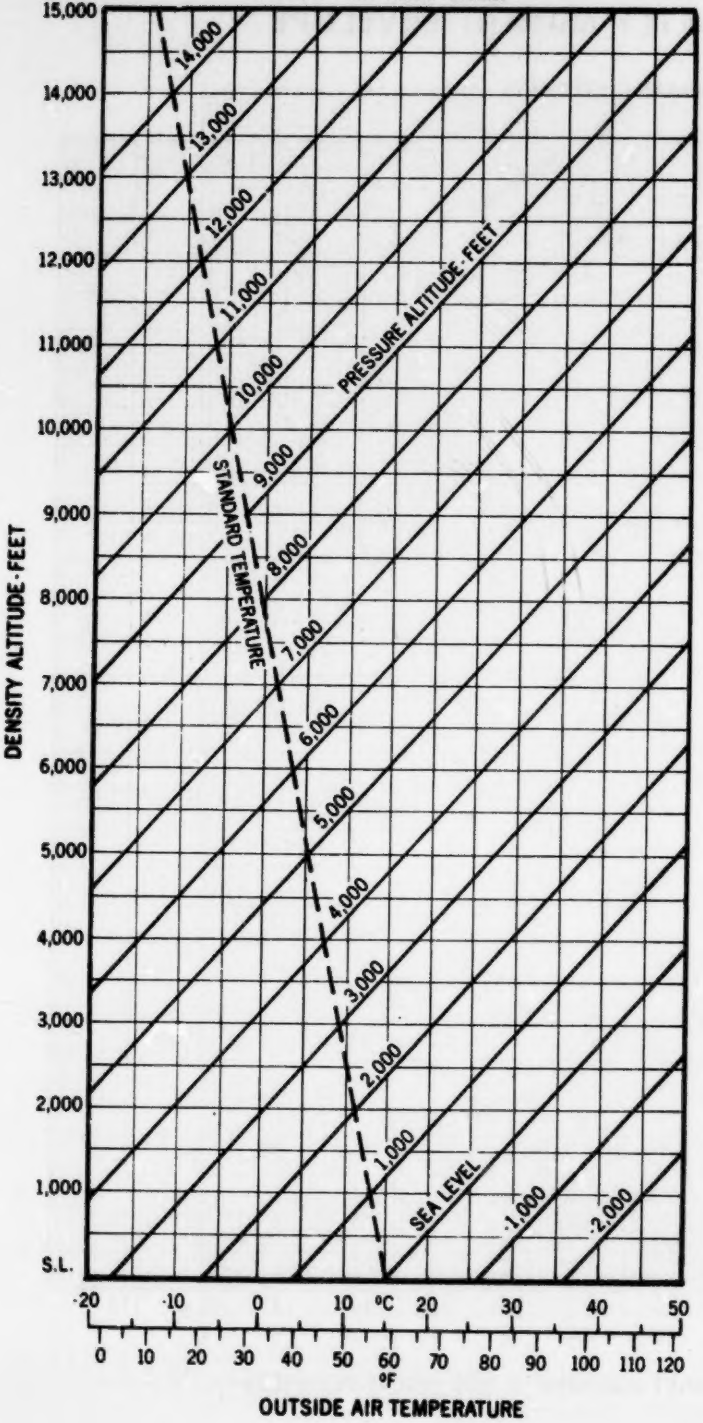


CENTER OF GRAVITY MOMENT ENVELOPE

NORMAL CATEGORY



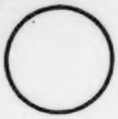
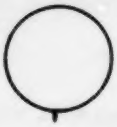
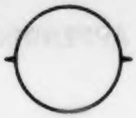
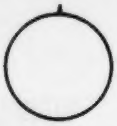
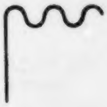
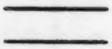
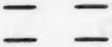
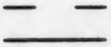
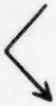
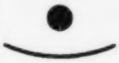
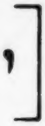
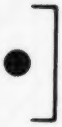
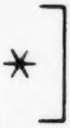
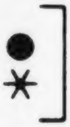
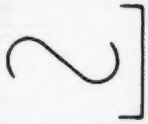
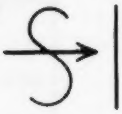
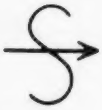
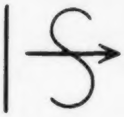
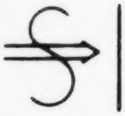
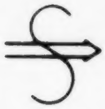
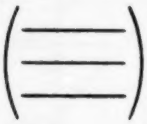
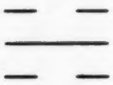
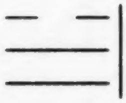
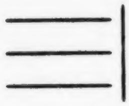
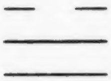
DENSITY ALTITUDE CHART



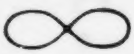
ALTIMETER SETTING IN.HG.	ALTITUDE ADDITION FOR OBTAINING PRESSURE ALTITUDE
28.0	1,825
28.1	1,725
28.2	1,630
28.3	1,535
28.4	1,435
28.5	1,340
28.6	1,245
28.7	1,150
28.8	1,050
28.9	955
29.0	865
29.1	770
29.2	675
29.3	580
29.4	485
29.5	390
29.6	300
29.7	205
29.8	110
29.9	20
29.92	0
30.0	- 75
30.1	-165
30.2	-255
30.3	-350
30.4	-440
30.5	-530
30.6	-620
30.7	-710
30.8	-805
30.9	-895
31.0	-965

APPENDIX 4

WEATHER SYMBOLS

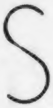
00  Cloud development NOT observed or NOT observable during past hour.	**01**  Clouds generally dissolving or becoming less developed during past hour.	**02**  State of sky on the whole unchanged during past hour.	**03**  Clouds generally forming or developing during past hour.	**04**  Visibility reduced by smoke,
10  Light fog.	**11**  Patches of shallow fog at station, NOT deeper than 6 feet on land.	**12**  More or less continuous shallow fog at station, NOT deeper than 6 feet on land.	**13**  Lightning visible, no thunder heard.	**14**  Precipitation within sight, but NOT reaching the ground at station.
20  Drizzle (NOT freezing and NOT falling as showers) during past hour, but NOT at time of ob.	**21**  Rain (NOT freezing and NOT falling as showers) during past hr., but NOT at time ob.	**22**  Snow (NOT falling as showers) during past hr., but NOT at time of ob.	**23**  Rain and snow (NOT falling as showers) during past hour, but NOT at time of observation.	**24**  Freezing drizzle or freezing rain (NOT falling as showers) during past hour, but NOT at time of observation.
30  Slight or moderate duststorm or sandstorm, has increased during past hour.	**31**  Slight or moderate duststorm or sandstorm, no appreciable change during past hour.	**32**  Slight or moderate duststorm or sandstorm, has decreased during past hour.	**33**  Severe duststorm or sandstorm, has decreased during past hr.	**34**  Severe duststorm or sandstorm, no appreciable change during past hour.
40  Fog at distance at time of ob., but NOT at station during past hour.	**41**  Fog in patches.	**42**  Fog, sky discernible, has become thinner during past hour.	**43**  Fog, sky NOT discernible, has become thinner during past hour.	**44**  Fog, sky discernible, no appreciable change during past hour.

05



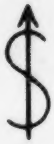
Dry haze.

06



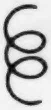
Widespread dust in suspension in the air, NOT raised by wind, at time of observation.

07



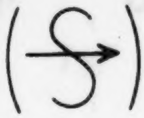
Dust or sand raised by wind, at time of ob.

08



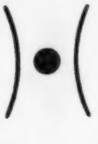
Well developed dust devil(s) within past hr.

09



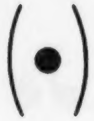
Duststorm or sandstorm within sight of or at station during past hour.

15



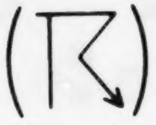
Precipitation within sight, reaching the ground, but distant from station.

16



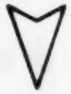
Precipitation within sight, reaching the ground, near to but NOT at station.

17



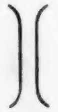
Thunder heard, but no precipitation at the station.

18



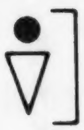
Squall(s) within sight during past hour.

19



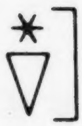
Funnel cloud(s) within sight during past hour.

25



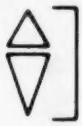
Showers of rain during past hour, but NOT at time of observation.

26



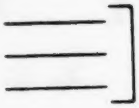
Showers of snow, or of rain and snow, during past hour, but NOT at time of observation.

27



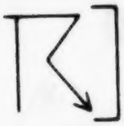
Showers of hail, or of hail and rain, during past hour, but NOT at time of observation.

28



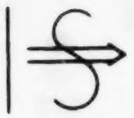
Fog during past hour, but NOT at time of ob.

29



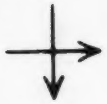
Thunderstorm (with or without precipitation) during past hour, but NOT at time of ob.

35



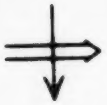
Severe duststorm or sandstorm, has increased during past hour.

36



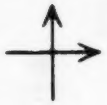
Slight or moderate drifting snow, generally low.

37



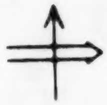
Heavy drifting snow, generally low.

38



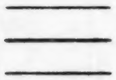
Slight or moderate drifting snow, generally high.

39



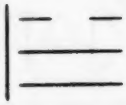
Heavy drifting snow, generally high.

45



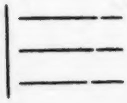
Fog, sky NOT discernible, no appreciable change during past hour.

46



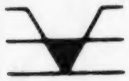
Fog, sky discernible, has begun or become thicker during past hour.

47



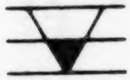
Fog, sky NOT discernible, has begun or become thicker during past hour.

48

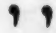
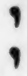
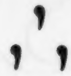
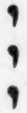
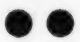
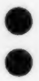
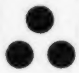
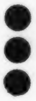
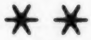
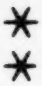
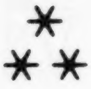
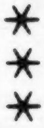
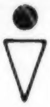
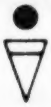
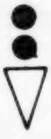
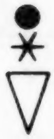
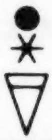
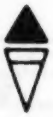
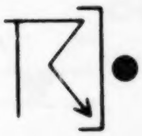
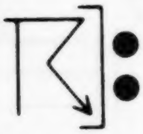
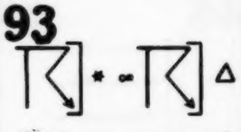
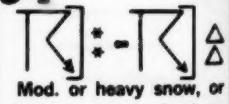


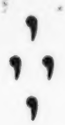
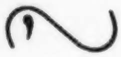
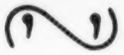
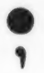
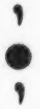
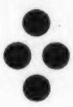
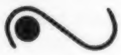
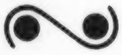
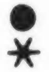
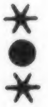
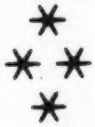
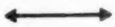
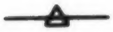
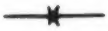
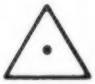
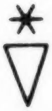
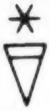
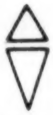
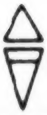
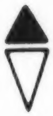
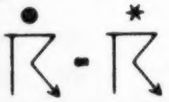
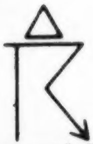
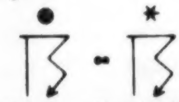
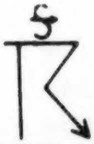
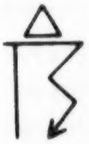
Fog, depositing rime, sky discernible.

49



Fog, depositing rime, sky NOT discernible.

50 Intermittent drizzle (NOT freezing) slight at time of observation.	**51**  Continuous drizzle (NOT freezing) slight at time of observation.	**52**  Intermittent drizzle (NOT freezing) moderate at time of ob.	**53**  Continuous drizzle (NOT freezing), moderate at time of ob.	**54**  Intermittent drizzle (NOT freezing), thick at time of observation.
60 Intermittent rain (NOT freezing), slight at time of observation.	**61**  Continuous rain (NOT freezing), slight at time of observation.	**62**  Intermittent rain (NOT freezing), moderate at time of ob.	**63**  Continuous rain (NOT freezing), moderate at time of observation.	**64**  Intermittent rain (NOT freezing), heavy at time of observation.
70 Intermittent fall of snowflakes, slight at time of observation.	**71**  Continuous fall of snowflakes, slight at time of observation.	**72**  Intermittent fall of snowflakes, moderate at time of observation.	**73**  Continuous fall of snowflakes, moderate at time of observation.	**74**  Intermittent fall of snowflakes, heavy at time of observation.
80  Slight rain shower(s).	**81**  Moderate or heavy rain shower(s).	**82**  Violent rain shower(s).	**83**  Slight shower(s) of rain and snow mixed.	**84**  Moderate or heavy shower(s) of rain and snow mixed.
90  Moderate or heavy shower(s) of hail , with or without rain or rain and snow mixed, not associated with thunder.	**91**  Slight rain at time of ob., thunderstorm during past hour, but NOT at time of observation.	**92**  Moderate or heavy rain at time of ob., thunderstorm during past hour, but NOT at time of observation.	**93**  Slight snow or rain and snow mixed or hail at time of observa., thunderstorm during past hour, but not at time of observation.	**94**  Mod. or heavy snow, or rain and snow mixed or hail at time of ob., thunderstorm during past hour, but NOT at time of observation.

55  Continuous drizzle (NOT ezing), thick at time of servation.	**56**  Slight freezing drizzle.	**57**  Moderate or thick freezing drizzle.	**58**  Drizzle and rain slight.	**59**  Drizzle and rain, moderate or heavy.
65  Continuous rain (NOT ezing), heavy at time of servation.	**66**  Slight freezing rain.	**67**  Moderate or heavy freezing rain.	**68**  Rain or drizzle and snow, slight.	**69**  Rain or drizzle and snow, moderate or heavy.
75  Continuous fall of snow- akes, heavy at time of ob- ervation.	**76**  Ice needles (with or without fog).	**77**  Granular snow (with or without fog).	**78**  Isolated starlike snow crystals (with or without fog).	**79**  Ice pellets (sleet, U.S. definition).
85  Slight snow shower(s).	**86**  Moderate or heavy snow shower(s).	**87**  Slight shower(s) of soft or small hail with or without rain or rain and snow mixed.	**88**  Moderate or heavy shower(s) of soft or small hail with or without rain or rain and snow mixed.	**89**  Slight shower(s) of hail , with or without rain or rain and snow mixed, pot associated with thunder.
95  Slight or mod. thunderstorm without hail , but with rain and/or snow at time of ob.	**96**  Slight or mod. thunderstorm, with hail at time of observation.	**97**  Heavy thunderstorm, without hail , but with rain and or snow at time of observation.	**98**  Thunderstorm combined with duststorm or sandstorm at time of ob.	**99**  Heavy thunderstorms with hail at time of ob.

APPENDIX 5

QUESTION CATEGORIES AND REFERENCES

Appendix 4 lists the question numbers, the test category or categories in which the question is used, and the question reference. The test categories are abbreviated as follows:

ALL — All categories
AIR — Airline Transport Pilot—Airplane (FAR Part 135)
ARV — Airline Transport Pilot—Helicopter (VFR)
ARI — Airline Transport Pilot—Helicopter (IFR)
ARG — Airline Transport Pilot—Gyroplane (VFR)

The question references are abbreviated as follows:

AC — Advisory Circular
AFD — Airport/Facility Directory
AIM — Airman's Information Manual
CFR — Code of Federal Regulations
COMP — Navigation Computer
ERC — En Route Chart (High Altitude, Low Altitude, Legend)
FAR — Federal Aviation Regulations
IAP — Instrument Approach Procedure Chart
IEOG — IFR Exam-O-Gram
KNG — Beechcraft King Air A-90 Manual
MAC — McCulloch J-2 Gyroplane Flight Manual
NAV — Aerodynamics for Naval Aviators (NAVWEPS 00-80T-80)
NVJ — Piper Navajo PA-31 Manual
SBR — Rockwell Sabreliner 80 Manual
SID — Standard Instrument Departure
SIK — Sikorsky S-61 Manual
TERPS — Terminal Instrument Procedures (8260.3B)
TWA — Trans World Airline Training Bulletin 80-1
VEOG — VFR Exam-O-Gram

To determine the applicable test category and reference for each question, refer to the question number on the following list. For example, question 6001 is used only on Airline Transport Pilot—Airplane (FAR Part 135) question selection sheets. The reference is FAR Part 135.

Item	*Category*	*Reference*
6001.	AIR	FAR 135
6002.	AIR	FAR 135
6003.	AIR	FAR 135
6004.	AIR	FAR 135
6005.	AIR	FAR 135
6006.	AIR	FAR 135
6007.	AIR	FAR 135
6008.	AIR	FAR 135
6009.	AIR	FAR 135
6010.	AIR	FAR 135
6011.	AIR	FAR 135
6012.	AIR	FAR 135
6013.	AIR	FAR 135
6014.	AIR	FAR 135
6015.	AIR	FAR 135
6016.	AIR	FAR 135
6017.	AIR	FAR 135
6018.	AIR	FAR 135
6019.	AIR	FAR 135
6020.	AIR	FAR 135
6021.	AIR	FAR 135
6022.	AIR	FAR 135
6023.	AIR	FAR 135
6024.	AIR	FAR 135
6025.	AIR	FAR 135
6026.	AIR	FAR 135
6027.	AIR	FAR 135
6028.	AIR	FAR 135
6029.	AIR	FAR 135
6030.	AIR	FAR 135

Item	*Category*	*Reference*
6031.	AIR	FAR 135
6032.	AIR	FAR 135
6033.	AIR	FAR 135
6034.	AIR	FAR 135
6035.	AIR	FAR 135
6036.	AIR	FAR 135
6037.	AIR	FAR 135
6038.	AIR	FAR 135
6039.	AIR	FAR 135
6040.	AIR	FAR 135
6041.	AIR	FAR 135
6042.	AIR	FAR 135
6043.	AIR	FAR 135
6044.	AIR	FAR 135
6045.	AIR	FAR 135
6046.	AIR	FAR 135
6047.	AIR	FAR 135
6048.	AIR	FAR 135
6049.	AIR	FAR 135
6050.	AIR	FAR 135
6051.	AIR	FAR 135
6052.	AIR	FAR 135
6053.	AIR	FAR 135
6054.	AIR	FAR 135
6055.	AIR	FAR 135
6056.	AIR	FAR 135
6057.	AIR	FAR 135
6058.	AIR	FAR 135
6059.	AIR	FAR 135
6060.	AIR	FAR 135
6061.	AIR	FAR 135
6062.	AIR	FAR 135
6063.	AIR	FAR 135
6064.	AIR	FAR 135
6065.	AIR	FAR 135
6066.	AIR	FAR 135
6067.	AIR	FAR 135
6068.	AIR	FAR 135
6069.	AIR	FAR 135
6070.	Air	FAR 135
6071.	AIR	FAR 135
6072.	AIR	FAR 135
6073.	AIR	FAR 135
6074.	AIR	FAR 135
6075.	AIR	FAR 135
6076.	AIR	FAR 135
6077.	AIR	FAR 135
6078.	AIR	FAR 135
6079.	AIR	FAR 135
6080.	AIR	FAR 135
6081.	AIR	FAR 135
6082.	AIR	FAR 135
6083.	AIR	FAR 135
6084.	AIR	FAR 135
6085.	AIR	FAR 135
6086.	AIR	FAR 135
6087.	AIR	FAR 135
6088.	AIR	FAR 135
6089.	AIR	FAR 135
6090.	AIR	FAR 135
6091.	AIR	FAR 135
6092.	AIR	FAR 135
6093.	AIR	FAR 135
6094.	AIR	FAR 135
6095.	AIR	FAR 135
6096.	AIR	FAR 135
6097.	AIR	FAR 135
6098.	AIR	FAR 135
6099.	AIR	FAR 135
6100.	AIR	FAR 135
6101.	AIR	FAR 135
6102.	AIR	FAR 135
6103.	AIR	FAR 135
6104.	AIR	FAR 135
6105.	AIR	FAR 135
6106.	AIR	FAR 135
6107.	AIR	FAR 135
6108.	AIR	FAR 135
6109.	AIR	FAR 135
6110.	AIR	FAR 135
6111.	AIR	FAR 135
6112.	AIR	FAR 135
6113.	AIR	FAR 135
6114.	AIR	FAR 135
6115.	AIR	FAR 135
6116.	AIR	FAR 135
6117.	AIR	FAR 135
6118.	AIR	FAR 135
6119.	AIR	FAR 135
6120.	AIR	FAR 135
6121.	AIR	FAR 135
6122.	AIR	FAR 135
6123.	AIR	FAR 135
6124.	AIR	FAR 135
6125.	AIR	FAR 135
6126.	AIR	FAR 135
6127.	AIR	FAR 135
6128.	AIR	FAR 135
6129.	AIR	FAR 135
6130.	AIR	FAR 135
6131.	AIR	FAR 135
6132.	AIR	FAR 135
6133.	AIR	FAR 135
6134.	AIR	FAR 135
6135.	AIR	FAR 135
6136.	AIR	FAR 135
6137.	AIR	FAR 135
6138.	AIR	FAR 135
6139.	AIR	FAR 135
6140.	AIR	FAR 135
6141.	AIR	FAR 135
6142.	AIR	FAR 135
6143.	AIR	FAR 135
6144.	AIR	FAR 135
6145.	AIR	FAR 135
6146.	AIR	FAR 135
6147.	AIR	FAR 135
6148.	AIR	FAR 135
6149.	AIR	FAR 135
6150.	AIR	FAR 135

Item	Category	Reference
6151.	AIR	FAR 135
6152.	AIR	FAR 135
6153.	AIR	FAR 135
6154.	AIR	FAR 135
6155.	AIR	FAR 135
6156.	AIR	FAR 135
6157.	AIR	FAR 135
6158.	AIR	FAR 135
6159.	AIR	FAR 135
6160.	AIR	FAR 135
6161.	AIR	FAR 135
6162.	AIR	FAR 135
6163.	AIR	FAR 135
6164.	AIR	FAR 135
6165.	AIR, ARI	AIM
6166.	AIR, ARI	AC 90–1A
6167.	AIR, ARI	AC 90–1A
6168.	AIR	FAR 135
6169.	AIR	IAP
6170.	AIR	FAR 135
6171.	AIR	IAP
6172.	AIR	IAP
6173.	AIR, ARI	IAP
6174.	AIR, ARI	IAP
6175.	AIR	FAR 135
6176.	AIR	FAR 135
6177.	AIR	IAP
6178.	AIR	IAP
6179.	AIR	IAP
6180.	AIR, ARI	IAP
6181.	AIR	FAR 135
6182.	AIR	FAR 135
6183.	AIR, ARI	IAP
6184.	AIR, ARI	IAP
6185.	AIR	FAR 61
6186.	AIR, ARI	IAP
6187.	AIR	IAP
6188.	AIR, ARI	IAP
6189.	AIR	FAR 135
6190.	AIR	FAR 61
6191.	ALL	FAR 61
6192.	AIR	FAR 61
6193.	AIR	FAR 61
6194.	AIR	FAR 61
6195.	AIR	FAR 61
6196.	ALL	FAR 61
6197.	AIR	FAR 61
6198.	AIR	FAR 61
6199.	AIR	FAR 61
6200.	ALL	FAR 61
6201.	ALL	FAR 61
6202.	AIR	FAR 61
6203.	AIR	FAR 61
6204.	AIR	FAR 61
6205.	AIR	FAR 61
6206.	AIR	FAR 91
6207.	AIR	FAR 61
6208.	ALL	FAR 91
6209.	ALL	FAR 91
6210.	AIR	FAR 91
6211.	AIR	FAR 91
6212.	ALL	FAR 91
6213.	AIR	FAR 91
6214.	ALL	FAR 91
6215.	ALL	FAR 91
6216.	AIR	FAR 91
6217.	AIR	FAR 91
6218.	AIR, ARI	FAR 91
6219.	AIR	FAR 91
6220.	AIR	FAR 91
6221.	AIR	FAR 91
6222.	ALL	FAR 91
6223.	AIR, ARI	FAR 91
6224.	AIR	FAR 91
6225.	AIR, ARI	FAR 91
6226.	AIR, ARI	FAR 91
6227.	AIR	FAR 91
6228.	AIR	FAR 91
6229.	AIR, ARI	FAR 91
6230.	AIR	FAR 91
6231.	ALL	FAR 91
6232.	AIR, ARI	FAR 91
6233.	AIR, ARI	FAR 91
6234.	AIR	FAR 91
6235.	AIR	FAR 91
6236.	AIR, ARI	IAP
6237.	AIR, ARI	FAR 91
6238.	AIR, ARI	IEOG 22
6239.	AIR	FAR 91
6240.	ALL	FAR 91
6241.	AIR, ARI	FAR 91
6242.	AIR, ARI	FAR 91
6243.	AIR, ARI	FAR 91
6244.	AIR, ARI	FAR 91
6245.	AIR	FAR 91
6246.	AIR	FAR 91
6247.	AIR	FAR 91
6248.	AIR	FAR 91
6249.	ALL	FAR 91
6250.	ALL	FAR 91
6251.	AIR, ARI	FAR 91
6252.	AIR, ARI	FAR 91
6253.	AIR, ARI	FAR 91
6254.	AIR, ARI	FAR 91
6255.	AIR	FAR 91
6256.	ALL	FAR 91
6257.	AIR, ARI	FAR 91
6258.	AIR, ARI	FAR 91
6259.	AIR	FAR 91
6260.	AIR, ARI	FAR 91
6261.	AIR	FAR 91
6262.	AIR	FAR 91
6263.	AIR, ARI	FAR 91
6264.	AIR, ARI	AIM
6265.	AIR, ARI	AIM
6266.	AIR, ARI	AIM
6267.	AIR, ARI	AIM
6268.	AIR, ARI	AIM
6269.	AIR, ARI	AIM
6270.	AIR, ARI	AIM

Item	Category	Reference	Item	Category	Reference	Item	Category	Reference
6271.	AIR, ARI	AIM	**6311.**	ALL	AIM	**6351.**	AIR, ARI	AIM
6272.	AIR, ARI	AIM	**6312.**	AIR, ARI	AIM	**6352.**	AIR, ARI	AIM
6273.	AIR, ARI	AIM	**6313.**	AIR	AIM	**6353.**	AIR	AIM
6274.	AIR, ARI	AIM	**6314.**	AIR	AIM	**6354.**	ALL	AIM
6275.	AIR, ARI	AIM	**6315.**	AIR	AC 61-27C	**6355.**	AIR, ARI	AIM
6276.	AIR, ARI	AIM	**6316.**	AIR	AC 61-27C	**6356.**	AIR, ARI	AIM
6277.	AIR, ARI	AIM	**6317.**	AIR	AC 61-27C	**6357.**	AIR, ARI	AIM
6278.	AIR, ARI	AIM	**6318.**	AIR	AC 61-27C	**6358.**	AIR, ARI	AIM
6279.	AIR, ARI	AIM	**6319.**	AIR	AC 61-27C	**6359.**	AIR	AIM
6280.	AIR, ARI	FAR 91	**6320.**	AIR	AC 61-27C	**6360.**	AIR, ARI	AIM
6281.	AIR, ARI	FAR 91	**6321.**	AIR	AC 61-27C	**6361.**	AIR, ARI	AIM
6282.	AIR, ARI	FAR 91	**6322.**	AIR	AC 61-27C	**6362.**	AIR	AIM
6283.	AIR, ARI	FAR 91	**6323.**	AIR	AC 61-27C	**6363.**	AIR	AIM
6284.	AIR, ARI	FAR 91	**6324.**	AIR	AC 61-27C	**6364.**	AIR, ARI	AIM
6285.	AIR	FAR 91	**6325.**	AIR	AIM	**6365.**	AIR, ARI	AIM
6286.	AIR, ARI	FAR 91	**6326.**	AIR, ARI	AIM	**6366.**	AIR, ARI	AIM
6287.	AIR, ARI	FAR 91	**6327.**	AIR, ARI	AIM	**6367.**	AIR, ARI	AIM
6288.	AIR, ARI	FAR 91	**6328.**	ALL	AIM	**6368.**	AIR, ARI	AIM
6289.	AIR, ARI	FAR 91	**6329.**	AIR,ARI	AIM	**6369.**	AIR, ARI	AIM
6290.	AIR, ARI	FAR 91	**6330.**	AIR	AIM	**6370.**	AIR	AIM
6291.	AIR	FAR 91	**6331.**	AIR, ARI	AC 61-27C	**6371.**	AIR	AIM
6292.	AIR, ARI	FAR 91	**6332.**	AIR, ARI	AIM	**6372.**	AIR, ARI	AIM
6293.	AIR, ARI	AIM	**6333.**	ALL	AIM	**6373.**	AIR	AIM
6294.	AIR, ARI	AIM	**6334.**	AIR, ARI	AIM	**6374.**	AIR	AIM
6295.	ALL	AIM	**6335.**	ALL	AIM	**6375.**	AIR, ARI	AIM
6296.	ALL	AIM	**6336.**	AIR, ARI	AIM	**6376.**	AIR, ARI	AIM
6297.	AIR, ARI	AIM	**6337.**	ALL	AIM	**6377.**	AIR	AIM
6298.	AIR, ARI	AIM	**6338.**	AIR, ARI	AIM	**6378.**	AIR	IEOG 28
6299.	AIR	AIM	**6339.**	AIR, ARI	AIM	**6379.**	AIR	AIM
6300.	ALL	AIM	**6340.**	AIR, ARI	AIM	**6380.**	AIR	AIM
6301.	AIR, ARI	AIM	**6341.**	AIR	AIM	**6381.**	ALL	AIM
6302.	AIR, ARI	AIM	**6342.**	AIR	AIM	**6382.**	AIR, ARI	AIM
6303.	AIR	AIM	**6343.**	AIR, ARI	AIM	**6383.**	ALL	AC 00-45B
6304.	AIR, ARI	AIM	**6344.**	AIR, ARI	AIM	**6384.**	AIR, ARI	AIM
6305.	AIR	AIM	**6345.**	AIR, ARI	AIM	**6385.**	AIR, ARI	AIM
6306.	AIR, ARI	AIM	**6346.**	AIR	IEOG 28	**6386.**	AIR, ARI	AIM
6307.	AIR	AIM	**6347.**	AIR, ARI	AIM	**6387.**	AIR	IAP
6308.	AIR, ARI	AIM	**6348.**	AIR, ARI	AIM	**6388.**	AIR, ARI	IAP
6309.	AIR, ARI	AIM	**6349.**	AIR, ARI	AIM	**6389.**	AIR, ARI	AFD
6310.	AIR, ARI	AIM	**6350.**	AIR, ARI	AIM	**6390.**	ALL	AIM

Item	Category	Reference
6391.	AIR, ARI	AIM
6392.	AIR, ARI	IAP
6393.	AIR, ARI	AIM
6394.	AIR, ARI	AIM
6395.	AIR, ARI	AIM
6396.	AIR, ARI	AIM
6397.	AIR, ARI	AIM
6398.	AIR, ARI	AIM
6399.	AIR	AIM
6400.	AIR, ARI	AIM
6401.	AIR	AIM
6402.	AIR, ARI	AIM
6403.	ALL	AIM
6404.	AIR	AIM
6405.	AIR	AIM
6406.	AIR, ARI	AIM
6407.	AIR, ARI	AIM
6408.	AIR, ARI	AIM
6409.	AIR	AIM
6410.	ALL	AC 00–6A
6411.	ALL	AC 00–6A
6412.	ALL	AIM
6413.	ALL	AC 00–45B
6414.	ALL	AC 00–45B
6415.	ALL	AC 00–45B
6416.	ALL	AC 00–45B
6417.	ALL	AC 00–45B
6418.	ALL	AC 00–45B
6419.	ALL	AIM
6420.	ALL	AC 00–45B
6421.	ALL	AC 00–45B
6422.	ALL	IEOG 15
6423.	ALL	AC 00–45B
6424.	AIR	AC 00–45B
6425.	ALL	AC 00–45B
6426.	ALL	AC 00–45B
6427.	ALL	AC 00–6A
6428.	ALL	AC 00–45B
6429.	ALL	AC 00–45B
6430.	ALL	AC 00–45B
6431.	ALL	AC 00–45B
6432.	ALL	AC 00–45B
6433.	ALL	AC 00–45B
6434.	ALL	AC 00–45B
6435.	ALL	AC 00–45B
6436.	ALL	AC 00–45B
6437.	ALL	AC 00–45B
6438.	ALL	AC 00–6A
6439.	ALL	AC 00–6A
6440.	ALL	AC 00–45B
6441.	ALL	AC 00–45B
6442.	ALL	AC 00–45B
6443.	ALL	IEOG 15
6444.	ALL	IEOG 15
6445.	ALL	IEOG 15
6446.	ALL	IEOG 15
6447.	ALL	AC 00–45B
6448.	ALL	AC 00–45B
6449.	ALL	AC 00–45B
6450.	ALL	AC 00–45B
6451.	ALL	AC 00–45B
6452.	ALL	AC 00–45B
6453.	ALL	AC 00–6A
6454.	ALL	AC 00–45B
6455.	ALL	AC 00–45B
6456.	ALL	AC 00–45B
6457.	ALL	AC 00–45B
6458.	ALL	AC 00–45B
6459.	ALL	AC 00–45B
6460.	AIR	AC 00–6A
6461.	ALL	AC 00–6A
6462.	AIR	AC 00–45B
6463.	ALL	IEOG 17
6464.	ALL	IEOG 17
6465.	AIR	AC 00–45B
6466.	AIR	AC 00–45B
6467.	AIR	AC 00–45B
6468.	AIR	AC 00–45B
6469.	AIR	AC 00–45B
6470.	AIR	AC 00–45B
6471.	ALL	AC 00–45B
6472.	ALL	AC 00–45B
6473.	ALL	AC 00–45B
6474.	ALL	AC 00–45B
6475.	ALL	AC 00–45B
6476.	ALL	AC 00–45B
6477.	ALL	AC 00–45B
6478.	ALL	AC 00–6A
6479.	ALL	AC 00–45B
6480.	ALL	AC 00–45B
6481.	AIR	AC 00–45B
6482.	AIR	AC 00–45B
6483.	AIR	AC 00–45B
6484.	AIR	AC 00–45B
6485.	AIR	AC 00–45B
6486.	AIR	AC 00–45B
6487.	AIR	AC 00–45B
6488.	AIR	AC 00–45B
6489.	ALL	AC 00–6A
6490.	ALL	AC 00–45B
6491.	AIR	AC 00–6A
6492.	ALL	AC 00–6A
6493.	ALL	AC 00–45B
6494.	ALL	AC 00–6A
6495.	ALL	AC 00–6A
6496.	ALL	AC 00–6A
6497.	ALL	AC 00–6A
6498.	ALL	AC 00–6A
6499.	ALL	AC 00–6A
6500.	ALL	AC 00–6A
6501.	ALL	AC 00–6A
6502.	ALL	AC 00–6A
6503.	ALL	AC 00–6A
6504.	AIR	AC 00–6A
6505.	ALL	AC 00–50A
6506.	AIR	AC 00–6A
6507.	ALL	AC 00–45B
6508.	ALL	AC 00–6A
6509.	ALL	AC 00–6A
6510.	AIR	AC 00–45B

Item	Category	Reference
6511.	ALL	AC 00–45B
6512.	ALL	AC 00–6A
6513.	ALL	AC 00–6A
6514.	ALL	AC 00–6A
6515.	ALL	AC 00–6A
6516.	ALL	AC 00–6A
6517.	ALL	AC 00–6A
6518.	AIR, ARI	AC 00–45B
6519.	ALL	AC 00–6A
6520.	ALL	AC 00–45B
6521.	ALL	AC 00–6A
6522.	AIR	AIM
6523.	AIR	AC 00–45B
6524.	AIR	AC 60–9
6525.	ALL	AC 00–6A
6526.	ALL	AIM
6527.	ALL	AC 00–45B
6528.	ALL	AC 00–45B
6529.	ALL	AC 00–45B
6530.	ALL	AC 00–45B
6531.	ALL	AC 00–6A
6532.	ALL	AC 00–6A
6533.	ALL	AC 00–45B
6534.	ALL	AC 00–45B
6535.	ALL	AC 00–45B
6536.	ALL	AC 00–45B
6537.	AIR	AC 00–30
6538.	ALL	AC 00–6A
6539.	AIR	AC 00–45B
6540.	AIR	AC 00–45B
6541.	AIR	AC 00–45B
6542.	AIR	AC 00–45B
6543.	AIR	AC 00–45B
6544.	ALL	AC 00–6A
6545.	AIR	AC 00–45B
6546.	AIR	AC 00–45B
6547.	AIR	AC 00–45B
6548.	AIR	AC 00–45B
6549.	AIR	AC 00–6A
6550.	AIR	AC 00–6A
6551.	AIR	AC 00–6A
6552.	AIR	AC 00–6A
6553.	AIR	AC 00–45B
6554.	AIR	AC 00–30
6555.	ALL	AC 00–6A
6556.	ALL	AC 00–45B
6557.	AIR	AC 00–45B
6558.	AIR	AC 00–45B
6559.	AIR	AC 00–45B
6560.	AIR	AC 60–9
6561.	AIR	AC 00–6A
6562.	AIR	AC 00–6A
6563.	AIR	AC 00–30
6564.	AIR	AC 00–6A
6565.	ALL	AC 00–6A
6566.	ALL	AC 00–45B
6567.	ALL	AC 00–45B
6568.	ALL	AC 00–6A
6569.	ALL	AC 00–6A
6570.	ALL	AC 00–6A
6571.	ALL	AC 61–23B
6572.	ALL	AC 61–23B
6573.	ALL	AC 61–23B
6574.	ALL	AC 61–23B
6575.	ALL	AC 61–23B
6576.	AIR	KNG
6577.	AIR	KNG
6578.	AIR	KNG
6579.	AIR	KNG
6580.	AIR	KNG
6581.	AIR	KNG
6582.	AIR	KNG
6583.	AIR	KNG
6584.	AIR	KNG
6585.	AIR	KNG
6586.	AIR	AC 00–6A
6587.	AIR	KNG
6588.	AIR	KNG
6589.	AIR	KNG
6590.	AIR	AC 61–23B
6591.	AIR	AC 61–23B
6592.	AIR	AC 61–23B
6593.	AIR	AC 61–23B
6594.	AIR	AC 61–23B
6595.	AIR	AC 61–23B
6596.	AIR	KNG
6597.	AIR	KNG
6598.	AIR	KNG
6599.	AIR	KNG
6600.	AIR	KNG
6601.	AIR	KNG
6602.	AIR	KNG
6603.	AIR	KNG
6604.	AIR	KNG
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6608.	AIR	KNG
6609.	AIR	KNG
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6614.	AIR	KNG
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6617.	AIR	KNG
6618.	AIR	KNG
6619.	AIR	KNG
6620.	AIR	KNG
6621.	AIR	KNG
6622.	AIR	KNG
6623.	AIR	KNG
6624.	AIR	KNG
6625.	AIR	KNG
6626.	AIR	KNG
6627.	AIR	KNG
6628.	AIR	KNG
6629.	AIR	KNG
6630.	AIR	KNG

Item	Category	Reference
6631.	AIR	KNG
6632.	AIR	KNG
6633.	AIR	KNG
6634.	AIR	KNG
6635.	AIR	KNG
6636.	AIR	KNG
6637.	AIR	KNG
6638.	AIR	KNG
6639.	AIR	KNG
6640.	AIR	KNG
6641.	AIR	AC 61–21A
6642.	AIR	AC 00–21A
6643.	AIR	AC 61–21A
6644.	AIR	AC 61–21A
6645.	AIR	KNG
6646.	AIR	KNG
6647.	AIR	KNG
6648.	AIR	KNG
6649.	AIR	KNG
6650.	AIR	KNG
6651.	AIR	KNG
6652.	AIR	KNG
6653.	AIR	KNG
6654.	AIR	KNG
6655.	AIR	KNG
6656.	AIR	KNG
6657.	AIR	NVJ
6658.	AIR	NVJ
6659.	AIR	NVJ
6660.	AIR	NVJ
6661.	AIR	NVJ
6662.	AIR	NVJ
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6667.	AIR	NVJ
6668.	AIR	NVJ
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6670.	AIR	NVJ
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6672.	AIR	NVJ
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6674.	AIR	NVJ
6675.	AIR	NVJ
6676.	AIR	NVJ
6677.	AIR	SBR
6678.	AIR	SBR
6679.	AIR	SBR
6680.	AIR	SBR
6681.	AIR	SBR
6682.	AIR	SBR
6683.	AIR	SBR
6684.	AIR	SBR
6685.	AIR	SBR
6686.	AIR	SBR
6687.	AIR	SBR
6688.	AIR	SBR
6689.	AIR	SBR
6690.	AIR	SBR
6691.	AIR	SBR
6692.	AIR	SBR
6693.	AIR	SBR
6694.	AIR	SBR
6695.	AIR	SBR
6696.	AIR	SBR
6697.	AIR	SBR
6698.	AIR	SBR
6699.	AIR	SBR
6700.	AIR	SBR
6701.	AIR	AC 61–23B
6702.	AIR	AC 61–23B
6703.	AIR	AC 61–23B
6704.	AIR	AC 61–23B
6705.	AIR	AC 61–23B
6706.	AIR	AC 61–23B
6707.	AIR	AC 61–23B
6708.	AIR	AC 61–23B
6709.	AIR	AC 61–23B
6710.	AIR	AC 61–23B
6711.	AIR	AC 61–23B
6712.	AIR	AC 61–23B
6713.	AIR	AC 61–23B
6714.	AIR	AC 61–23B
6715.	AIR	AC 61–23B
6716.	AIR	AC 61–21A
6717.	AIR	AC 61–21A
6718.	AIR	AC 61–21A
6719.	AIR	AC 61–21A
6720.	AIR	NAV
6721.	AIR	FAR 135
6722.	AIR	NAV
6723.	AIR	AC 61–21A
6724.	AIR	NAV
6725.	AIR	NAV
6726.	AIR	NAV
6727.	AIR	NAV
6728.	AIR	NAV
6729.	AIR	NAV
6730.	AIR	NAV
6731.	AIR	COMP
6732.	AIR	NAV
6733.	AIR	NAV
6734.	AIR	AC 61–21A
6735.	AIR	NAV
6736.	AIR	NAV
6737.	AIR	AC 91–6A
6738.	AIR	KNG
6739.	AIR	KNG
6740.	AIR	KNG
6741.	AIR	KNG
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6749.	AIR	KNG
6750.	AIR	KNG

Item	Category	Reference
6751.	AIR	KNG
6752.	AIR	KNG
6753.	AIR	KNG
6754.	AIR	KNG
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6763.	AIR	KNG
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6770.	AIR	KNG
6771.	AIR	KNG
6772.	AIR	KNG
6773.	AIR	KNG
6774.	AIR	AC 61–23B
6775.	AIR	AC 61–23B
6776.	AIR	AC 61–23B
6777.	AIR	AC 61–23B
6778.	AIR	AC 61–23B
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6789.	AIR	AC 61–23B
6790.	AIR	AC 61–23B
6791.	AIR	AC 61–23B
6792.	AIR	AC 61–23B
6793.	AIR	AC 61–23B
6794.	AIR	AC 61–23B
6795.	AIR	AC 61–23B
6796.	AIR	AC 61–23B
6797.	AIR	AC 61–23B
6798.	AIR	AC 61–21A
6799.	AIR	AC 61–21A
6800.	AIR	AC 61–21A
6801.	AIR	AC 91–6A
6802.	AIR	NAV
6803.	AIR	AC 91–55
6804.	AIR	AIM
6805.	ALL	ERC
6806.	AIR	AC 61–27C
6807.	AIR	FAR 91
6808.	AIR	AC 61–27C
6809.	AIR	IAP
6810.	AIR	AC 61–84A
6811.	AIR, ARI	AC 90–1A
6812.	AIR	AIM
6813.	AIR	IAP
6814.	AIR, ARI	AC 61–27C
6815.	AIR	AIM
6816.	AIR	AC 91–24
6817.	ALL	ERC
6818.	AIR, ARI	ERC
6819.	AIR, ARI	ERC
6820.	AIR, ARI	ERC
6821.	AIR, ARI	AC 61–27C
6822.	AIR	ERC
6823.	AIR, ARI	AC 90–1A
6824.	AIR, ARI	ERC
6825.	AIR	IAP
6826.	AIR	IAP
6827.	AIR	IAP
6828.	AIR	IAP
6829.	AIR	IAP
6830.	AIR, ARI	IAP
6831.	AIR	IAP
6832.	AIR	IAP
6833.	AIR	IAP
6834.	AIR	IAP
6835.	AIR	IAP
6836.	AIR	IAP
6837.	AIR	IAP
6838.	AIR	AC 00–50A
6839.	AIR	IAP
6840.	AIR	AC 120–29
6841.	AIR, ARI	FAR 91
6842.	AIR, ARI	AIM
6843.	AIR	IAP
6844.	AIR	AC 91–24
6845.	AIR, ARI	IAP
6846.	AIR	IAP
6847.	AIR	IAP
6848.	AIR	AC 91–43
6849.	AIR	AC 61–27C
6850.	AIR	AC 91–43
6851.	AIR	AC 00–50A
6852.	AIR	AC 91–43
6853.	AIR	IAP
6854.	AIR	IAP
6855.	AIR	IAP
6856.	AIR	IAP
6857.	AIR	IAP
6858.	AIR, ARI	AIM
6859.	AIR	AC 00–50A
6860.	AIR	IAP
6861.	AIR	AC 00–50A
6862.	AIR	IAP
6863.	AIR	AC 91–24
6864.	AIR	AC 91–55
6865.	AIR	AC 120–12
6866.	ALL	AC 103–4
6867.	AIR	AC 67–1
6868.	AIR	AC 120–32
6869.	AIR	AC 120–32
6870.	AIR	AC 120–12

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6871.	AIR	CFR 172
6872.	AIR	CFR 172
6873.	AIR	CFR 172
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6875.	AIR	CFR 172
6876.	AIR	CFR 175
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6898.	ARV	FAR 127
6899.	ARV	FAR 127
6900.	ARV	FAR 127
6901.	ARV	FAR 127
6902.	ARV	FAR 127
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6912.	ARV	FAR 91
6913.	ARV	FAR 127
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6919.	ARV	FAR 127
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6921.	ARV	FAR 127
6922.	ARV	FAR 127
6923.	ARV	FAR 127
6924.	ARV	FAR 127
6925.	ARV	FAR 127
6926.	ARV	FAR 127
6927.	ARV	FAR 127
6928.	ARV	FAR 91
6929.	ARV	FAR 127
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6931.	ARV	FAR 127
6932.	ARV	AIM
6933.	ARV	AC 61–13B
6934.	ARV	AC 61–13B
6935.	ARV	AC 61–13B
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6949.	ARV	AC 61–13B
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6983.	ARV	SIK
6984.	ARV	SIK
6985.	ARV	SIK
6986.	ARV	SIK
6987.	ARV	SIK
6988.	ARV	SIK
6989.	ARV	AC 61–23B
6990.	ARV	AC 61–23B

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6993.	ARV	AC 61–23B
6994.	ARV	AC 61–23B
6995.	ARV	AC 61–23B
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7028.	ARI	FAR 97
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7030.	ARI	FAR 97
7031.	ARI	FAR 97
7032.	ARI	FAR 97
7033.	ARI	IAP
7034.	ARI	FAR 91
7035.	ARI	FAR 127
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7045.	ARG	AC 61–13B
7046.	ARV, ARG	AC 61–13B
7047.	ARV, ARG	AC 61–13B
7048.	ARG	AC 61–13B
7049.	ARG	MAC
7050.	ARG	MAC
7051.	ARG	MAC
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